DES 89-18

September 1989

DRAFT

# SAN LUIS RESOURCE MANAGEMENT PLAN AND ENVIRONMENTAL IMPACT STATEMENT

U. S. Department of the Interior
Bureau of Land Management
Canon City District
San Luis Resource Area
Colorado

# United States Department of the Interior

BUREAU OF LAND MANAGEMENT
CANON CITY DISTRICT OFFICE
P.O. BOX 311
CANON CITY, COLORADO 81212

Dear Reader:

Enclosed for your review and comment is the Draft San Luis Resource Management Plan/Environmental Impact Statement (DRMP/EIS).

The draft RMP/EIS presents four multiple use management alternatives for the BLM lands within the San Luis Resource Planning Area and analyzes the environmental impacts of implementing each alternative. This document also serves as the draft environmental impact statement (DEIS) for the analysis of the Rio Grande Wild and Scenic River proposal. Related documents, including the San Luis Resource Area Grazing EIS and the Canon City District Wilderness Environmental Impact Statement, are available for review in the San Luis Resource Area Office in Alamosa, Colorado, and the Canon City District Office in Canon City, Colorado.

You are invited to make written or oral comments on this document. Public hearings to receive oral comments are scheduled as follows:

| Date and Time | Address | City/State |
|---|---|---|
| Wednesday, November 1<br>2 to 4 p.m. and 7 to 9 p.m. | Rodeway Inn<br>11595 W. 6th Avenue | Lakewood, Colorado |
| Thursday, November 2<br>2 to 4 p.m. and 7 to 9 p.m. | Holiday Inn<br>333 Santa Fe Avenue | Alamosa, Colorado |

An informal open house will be held 1 hour prior to each session to allow you to meet with BLM representatives to discuss and ask questions regarding the draft RMP/EIS.

For consideration, your written comments must be received by close of business (4:30 p.m.) on December 26, 1989. Please include your name and complete mailing address on all written comments, including any copies of oral testimony that you make available to us.

Written comments should be addressed to Dave Taliaferro, RMP Team Leader, Bureau of Land Management, Canon City District Office, P.O. Box 1171, Canon City, CO 81212.

Sincerely yours,

Donnie R. Sparks

Donnie R. Sparks
District Manager

# DRAFT

# SAN LUIS

# RESOURCE MANAGEMENT PLAN

AND

# ENVIRONMENTAL IMPACT STATEMENT

DES 89-18

**SEPTEMBER 1989**

Prepared by
United States Department of the Interior
Bureau of Land Management
Colorado State Office
Canon City District Office
San Luis Resource Area

Prepared by: Dennis D. Zachman — 8/8/89
Area Manager, San Luis Resource Area — Date

Recommended by: Donnie R. Sparks — 8/8/89
District Manager, Canon City — Date

Approved by: Robert Moore — 8-15-89
State Director, Colorado — Date

# DRAFT RESOURCE MANAGEMENT PLAN

**and**

# ENVIRONMENTAL IMPACT STATEMENT

**for the**

# SAN LUIS PLANNING AREA

## Alamosa, Conejos, Costilla, Rio Grande, and Saguache Counties, Colorado

Draft (X) Final ( )

Lead Agency: The United States Department of the Interior, Bureau of Land Management

1. Type of Action: Administrative

2. For further information, contact: Dave Taliaferro, RMP Team Leader, Bureau of Land Management, Canon City District, P.O. Box 1171, Canon City, CO 81212; telephone (719) 275-0631.

3. Abstract: This draft resource management plan and environmental impact statement describes and analyzes four alternatives for managing the public lands and resources within the San Luis Planning Area in Colorado. These alternatives are: (1)Existing Management (No Action) Alternative; (2) Natural Resource Enhancement Alternative; (3) Resource Production Enhancement Alternative; and (4) Preferred Alternative. This document also includes the environmental analysis required for the wild and scenic river proposal.

4. Comments on the draft resource management plan and environmental statement must be received by: Close of business, Friday, December 26, 1989.

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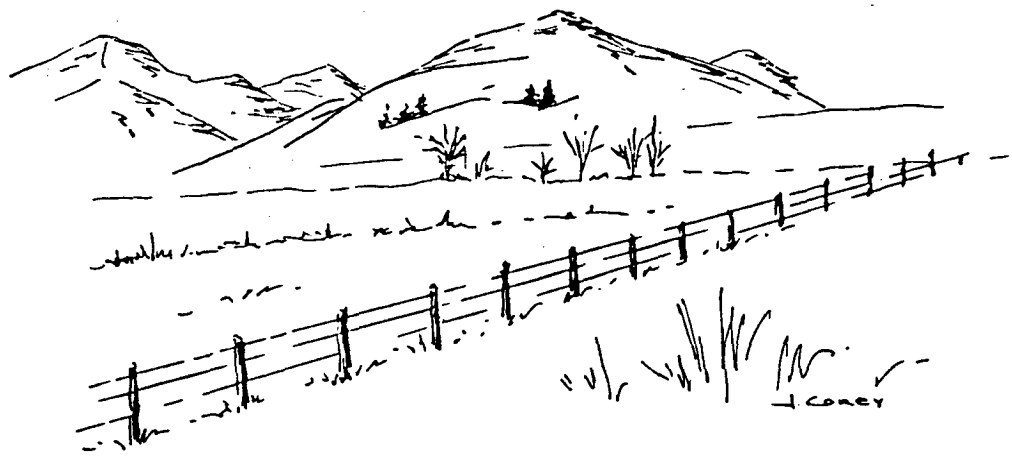

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Base Map

# SUMMARY

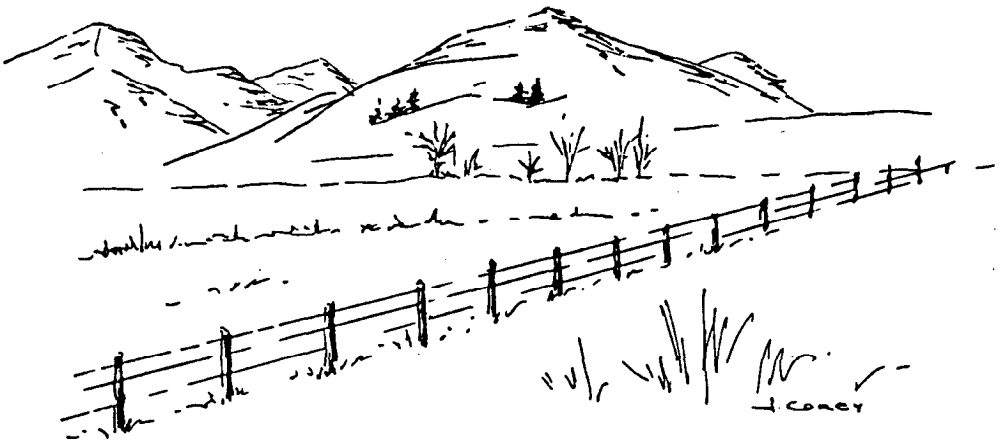
# SUMMARY

The San Luis Resource Management Plan identifies the direction for the proposed management of BLM lands for the next 15 to 20 years within the Bureau of Land Management San Luis Resource Area. Located in south-central Colorado, the San Luis Resource Area encompasses 520,677 acres of Federal surface estate and a total of 621,000 acres of subsurface mineral estate within Alamosa, Conejos, Costilla, Rio Grande, and Saguache Counties. These lands are further described in Chapter 1, Planning Area Location.

Preparation of this resource management plan was guided by BLM planning regulations issued under the authority of the *Federal Land Policy and Management Act* (FLPMA) of 1976. The plan focuses on 6 issues with conflicts, 14 important management concerns, and 11 other considerations and the decisions needed for resolution. The six issues with conflicts are: 1) land tenure adjustments, 2) rights-of-way management, 3) public land access, 4) off-highway vehicle use, 5) suitability for exploration/development of mineral resources, and 6) special management designations. These issues with conflicts, the management concerns, and other considerations are further described in Chapter 1, Topics Addressed in the Plan and in Chapter 2, Affected Environment.

To assist decision-makers and the general public in choosing appropriate solutions to topics addressed in this plan, four alternatives or management options are addressed: 1) Existing Management Alternative, 2) Natural Resource Enhancement Alternative, 3) Resource Production Enhancement Alternative, and 4)Preferred Alternative. This range of alternatives was limited to those considered to be reasonable and those that could be implemented for management of BLM land over the next 15 to 20 years. The principles of multiple use and sustained yield were observed in alternative formulation, and environmental values were protected to the extent required by applicable laws, regulations, and policies. A more detailed description of these alternative is in Chapter 3.

The management actions set forth in each of the alternatives were analyzed for environmental consequences on 24 resources and resource uses. The Preferred Alternative was developed and analyzed to represent the best estimate of an optimum multiple use mix of land management for BLM lands in the San Luis Resource Area. This alternative modifies and combines actions proposed in the other three alternatives. The management and the resulting consequences of these actions in all four alternatives are described in detail in chapter 4. Table S-1 summarizes the differences of these consequences for each of the alternatives.



# TABLE S-1
## Summarized Comparison of Alternatives

| Proposed Management Actions | Existing Management Alternative | Natural Resource Enhancement Alternative | Resource Production Enhancement Alternative | Preferred Alternative |
|---|---|---|---|---|
| **Fluid Minerals Management** | Open standard leasing - 356,650 acres (58%) | Open standard leasing - 145,301 acres (23.5%) | Open standard leasing - 597,646 acres (96%) | Open standard leasing - 219,291 acres (35%) |
| | Open for leasing with various limitations - 248,596 acres (39%) | Open for leasing with various limitations - 384,105 acres (62%) | Open for leasing with various limitations - 14,010 acres (2.5%) | Open for leasing with various limitations - 384,105 acres (62%) |
| | Leasing with NSO - 12,005 acres (2.5%) | Leasing with NSO - 87,845 acres (14%) | Leasing with NSO - 5,595 acres (1%) | Leasing with NSO - 13,855 acres (2.5%) |
| | Closed to Leasing - 3,620 acres (0.5%) | Closed to Leasing - 3,620 acres (0.5%) | Closed to leasing - 3,620 acres (0.5%) | Closed to leasing - 3,620 acres (0.5%) |
| **Locatable Minerals Management** | Open to entry - 610,621 acres (98%) | Open to entry 601,665 acres (97%) | Open to entry - 617,571 acres (99%) | Open to entry - 605,921 acres (98%) |
| | Withdrawn from entry - 10,250 acres (2%) | Withdrawn from entry - 19,206 acres (3%) | Withdrawn from entry - 3,300 acres (1%) | Withdrawn from entry - 14,950 acres (2%) |
| **Minerals Materials Management** | Open for disposal - 613,176 acres (99%) | Open for disposal - 525,643 acres (84%) | Open for disposal - 616,476 acres (99%) | Open for disposal - 601,162 acres (97%) |
| | Closed to disposal - 7,695 acres (1%) | Closed to disposal - 95,228 acres (16%) | Closed to disposal - 4,395 acres (1%) | Closed to disposal - 19,709 acres (3%) |
| **Paleontological Resources** | Provide inventory and protection for surface disturbing proposals. | Provide intensive inventory and protection, interpretation, and management. A public educational fossil dig site provided. | Provide inventory and protection for surface disturbing proposals. | Provide intensive inventory and protection, interpretation, and management. A public educational fossil dig site provided. |
| **Riparian Resource Management** | Good to excellent condition on 1,400 acres, fair condition on 74 acres, and poor condition on 274 acres would be maintained. 880 acres of additional riparian vegetation would be redeveloped (mostly historic wetlands) and about 1,413 additional acres would be inventoried. Changes in livestock management would improve condition on 70 acres. | Good to excellent condition would be maintained on 1,400 acres; fair and/or poor condition would be improved on 400 acres; 15 acres would remain in poor condition. 1,370 acres of additional riparian vegetation would be redeveloped (mostly historic wetlands) and about 1,413 additional acres would be inventoried. | Good to excellent condition on 1,400 acres, fair condition on 74 acres, and poor condition on 287 acres would be maintained. 475 acres of additional riparian vegetation would be redeveloped (mostly historic wetlands) and about 1,413 additional acres would be inventoried . Changes in livestock management would improve condition on 70 acres. | Good to excellent condition would be maintained on 1,400 acres; fair or poor condition would be improved on 400 acres; 15 acres would remain in poor condition. 1,370 acres of additional riparian vegetation would be redeveloped (mostly historic wetlands) and about 1,413 additional acres would be inventoried. |
| **Livestock Grazing Management** | 32,400 AUMs would be available to grazing domestic livestock. | 32,400 AUMs would be available to grazing domestic livestock. | 32,400 AUMs would be available to grazing domestic livestock. | 32,400 AUMs would be available to grazing domestic livestock. |
| | A portion of the potential 11,500 AUMs would be available to livestock (based on monitoring). | A potential increase of additional AUM would not be available to livestock. | All of a potential increase of 11,500 AUMs would be available to livestock. | A portion (40% or 4,600 AUMs) of the potential increase of 11,500 AUMs would be available to livestock. |

**TABLE S-1 (Continued)**

| Proposed Management Actions | Existing Management Alternative | Natural Resource Enhancement Alternative | Resource Production Enhancement Alternative | Preferred Alternative |
|---|---|---|---|---|
| **Wildlife and Fish Habitat Management** | Waterfowl and shore birds on public lands would increase significantly. | Waterfowl and shore birds on public lands would increase significantly. | Waterfowl and shore birds on public lands would increase. | Waterfowl and shore birds on public lands would increase significantly. |
| | 48,000 AUMs available to wildlife habitat. A portion of the potential increase of 10,000 AUMs could be available to wildlife. | All new forage produced above the 48,000 AUMs presently available would go to wildlife habitat. All of the potential increase of 11,500 AUMs would be available to wildlife. | 48,000 AUMs available to wildlife habitat. No portion of the potential increase of 11,500 AUMs would be available to wildlife. | 48,000 AUMs available to wildlife habitat. A portion (60% or 6,900 AUMs) would be available to wildlife and other nonlivestock uses. |
| | Big game winter stress would be reduced on 247,596 acres of crucial winter habitat. | Big game winter stress would be reduced very significantly on 384,105 acres of crucial winter habitat. | Big game winter stress would be reduced significantly on 14,010 acres of crucial winter habitat. | Big game winter stress would be reduced on 384,105 acres of crucial winter habitat. |
| | 72 miles and 180 acres of warm and cold water fisheries habitat available. | 72 miles and 180 acres of warm and cold water fisheries habitat available. | 72 miles and 180 acres of warm and cold water fisheries habitat available. | 72 miles and 180 acres of warm and cold water fisheries habitat available. |
| **Forest and Woodlands Management** | 5,769 acres (98%) of commercial operable forest (288 Mbf). | 1,094 acres (19%) of commercial operable forest (55 Mbf). | 5,894 acres (100%) of commercial operable forest available (288 Mbf). | 5,769 acres (98%) of commercial operable forest (288 Mbf). |
| | 10,688 acres (86%) of productive operable woodlands (567 cords). | 6,982 acres (56%) of productive operable woodlands (370 cords). | 12,482 acres (100%) of productive operable woodlands (660 cords). | 11,992 acres (96%) of productive operable woodlands (633 cords). |
| | Age class/growth improvement and access improvement. | Very limited age class/ growth improvement and access improvement. | Age class/growth improvement and access improvement | Age class/growth improvement and access improvement. |
| **Lands Tenure Adjustment Management** | Disposal of some acres of BLM classed as Category I lands (disposal by any method/no acquisitions) could occur in these areas. Acquisition or disposal of remainder of area classed as Category II lands in land tenure opportunity areas (disposal with exchange only/acquisitions) could occur in these areas. | All lands would be classified as Category II lands in land tenure opportunity areas. | Disposal of some acres of BLM classed as Category I lands (disposal by any method/no acquisitions) could occur in these areas. Acquisition or disposal of remainder of area classed as Category II lands in land tenure opportunity areas (disposal with exchange only/acquisitions) could occur in these areas. | Same as Existing Management Alternative except priority listing for acquisition/ exchange. Category I lands are limited to scattered parcels and tracts. |

TABLE S-1 (Continued)

| Proposed Management Actions | Existing Management Alternative | Natural Resource Enhancement Alternative | Resource Production Enhancement Alternative | Preferred Alternative |
|---|---|---|---|---|
| **Lands Withdrawal Management** | Existing withdrawals retained; no new withdrawals recommended. | Existing withdrawals retained except water storage/powersite withdrawals on the wild and scenic Rio Grande River proposal. If designated, new withdrawal would be recommended to protect these river values. | Existing withdrawals recommended for termination; no new withdrawals recommended. | Existing withdrawals retained except water storage/powersite withdrawals on the wild and scenic Rio Grande River proposal. If designated, new withdrawal would be recommended to protect these river values. |
| **Lands Access Acquisition** | Directed by existing area transportation plan. | Natural resource values would be enhanced (e.g., special plants and animals, riparian, wildlife habitat, recreation values, etc.). | Production resource values would be enhanced (e.g., mineral development, recreation, timber sales, etc.). | Directed by access ranking criteria: benefits multiple public agencies; benefits in CRMAP; benefits scenic easements along Rio Grande River Corridor; benefits to all others. |
| **Lands Rights-of-Way Management** | No corridors designated. | No corridors designated | Utility corridors would be designated per WUG with one exception. | Utility corridors designated per WUG except would avoid: Middle Creek area; Rio Grande River Corridor; Blanca WHA; riparian zones. |
| | BLM lands open for consideration for development of major utility facilities with stipulations on a case-by-case basis. | BLM lands open for consideration for development of major utility facilities with stipulations on a case-by-case basis.<br><br>Special limitations: intensive recreation areas; riparian areas; special plants/animals.<br><br>ROWs would avoid all ACECs. ROWs would conform to VRM objectives. | BLM lands open for consideration for development of major utility facilities with stipulations on a case-by-case basis.<br><br>Rio Grande River Corridor closed to major utilities. | All other BLM lands open for consideration for development of major utility facilities with stipulations on case-by-case basis. |

**TABLE S-1 (Continued)**

| Proposed Management Actions | Existing Management Alternative | Natural Resource Enhancement Alternative | Resource Production Enhancement Alternative | Preferred Alternative |
|---|---|---|---|---|
| **Areas of Special Concern** | 136,984 acres identified for special management; 56,666 acres (41%) would be designated: Blanca area WHA; Trickle Mtn. WHA; Rio Grande River Corridor SRMA (4,395 acres). | All 138,605 acres (100%) identified for special management would be designated: Sand Castle area ACEC; San Luis Hills area ACEC; Blanca ACEC/WHA/ SRMA; Trickle Mtn. ACEC/WHA; Rio Grande River/Box Corridor ACEC SRMA and wild & scenic river (6,016 acres); Elephant Rocks area ACEC; Flat Top area ACEC; Bishop Rock area ACEC; Los Mogotes area ACEC; Cumbres & Toltec Scenic Railroad ACEC. | 136,984 acres identified for special management; 56,666 acres (41%) would be designated: Trickle Mtn. WHA; Blanca WHA/SRMA; Rio Grande River Corridor SRMA. | 136,984 acres identified for special management; 126,802 acres (92%) would be designated: Sand Castle area ACEC; San Luis Hills/Flat Top areas ACEC; Blanca WHA; Trickle Mtn. ACEC/ WHA; Rio Grande River Corridor ACEC/SRMA/ wild & scenic river (4,395 acres); Cumbres & Toltec Scenic Railroad ACEC Los Mogotes ACEC. |
| | 80,318 acres (59%) would not be designated. | | 80,318 acres (59%) would not be designated. | 10,182 acres (8%) would not be designated. |
| **Recreational Management** | 12,145 acres (2%) would be for intensive recreation. | 13,766 acres (3%) would be for intensive recreation. | 12,145 (2%) acres would be for intensive recreation. | 12,145 (2%) acres would be for intensive recreation. |
| | 508,532 acres (98%) would be for extensive recreation opportunities. | 506,911 acres (97%) would be for extensive recreation opportunities. | 508,532 acres (98%) would be for extensive recreation opportunities. | 508,532 acres (98%) would be for extensive recreation opportunities. |
| | 463,346 acres (89%) open to OHV use. | 102,828 acres (20%) open to OHV use. | 457,751 acres (88%) open to OHV use. | 127,240 acres (24%) open to OHV use. |
| | 52,271 acres (10%) open to limited OHV use. | 375,996 acres (72%) open to limited OHV use. | 62,926 acres (12%) open to limited OHV use. | 386,310 acres (75%) open to limited OHV use. |
| | 5,060 acres (1%) closed to OHV use. | 41,853 acres (8%) closed to OHV use. | 0 acres (0%) closed to OHV use. | 7,060 acres (1%) closed to OHV use. |
| **Visual Resource Management** | 146,370 acres of VRM Class II would become class III eventually. Remainder of area (371,932 acres) (class III & IV) would be managed to maintain present visual characteristics. | All areas would be managed to maintain and enhance visual characteristics. | 146,370 acres of VRM Class II could eventually become class III. Remainder of area (class III & IV) would be managed to maintain those visual characteristics. | Approximately 19,000 acres of VRM Class II would become class III during life of plan. Remainder of area (class III & IV) would be managed to maintain those visual characteristics. |

**TABLE S-1 (Continued)**

| Proposed Management Actions | Existing Management Alternative | Natural Resource Enhancement Alternative | Resource Production Enhancement Alternative | Preferred Alternative |
|---|---|---|---|---|
| **Historical Resource and Archaeological Resources** | Cultural values on 19 sites would be protected under Section 106 of the NHP Act of 1966. Inventory needed on case-by-case basis. | Cultural values on 19 sites would be protected under Section 106 of the NHP Act of 1966. Sites eligible for NRHP status would be nominated and public awareness would be enhanced for these sites. Five cultural resource management plans would be completed for active site interpretation and protection. Significant sites retained in BLM ownership. | Cultural values on 19 sites would be protected under Section 106 of the NHP Act of 1966. Inventory as needed on a case-by-case basis. | Cultural values on 19 sites would be protected under Section 106 of the NHP Act of 1966. Sites eligible for NRHP status would be nominated and public awareness would be enhanced for these sites. Five cultural resource management plans would be completed for active site interpretation and protection. Significant sites would be retained in BLM ownership. |

# CHAPTER 1

# INTRODUCTION

# CHAPTER 1

# INTRODUCTION

This document consists of a draft resource management plan (RMP) and a draft environmental impact statement (EIS) analyzing the effects of the management actions and alternatives within the plan. The draft RMP/EIS has been prepared in accordance with the Bureau of Land Management (BLM) planning regulations (43 CFR 1600) and the *National Environmental Policy Act* (NEPA) of 1969 (40 CFR 1500).

## PURPOSE AND NEED

The primary purpose of this RMP/EIS is to update and integrate BLM land use planning for the San Luis Resource Area (SLRA) into a single, comprehensive land use plan. This will provide the overall framework for managing and allocating public land resources and uses in the San Luis Planning Area over the next 15 to 20 years.

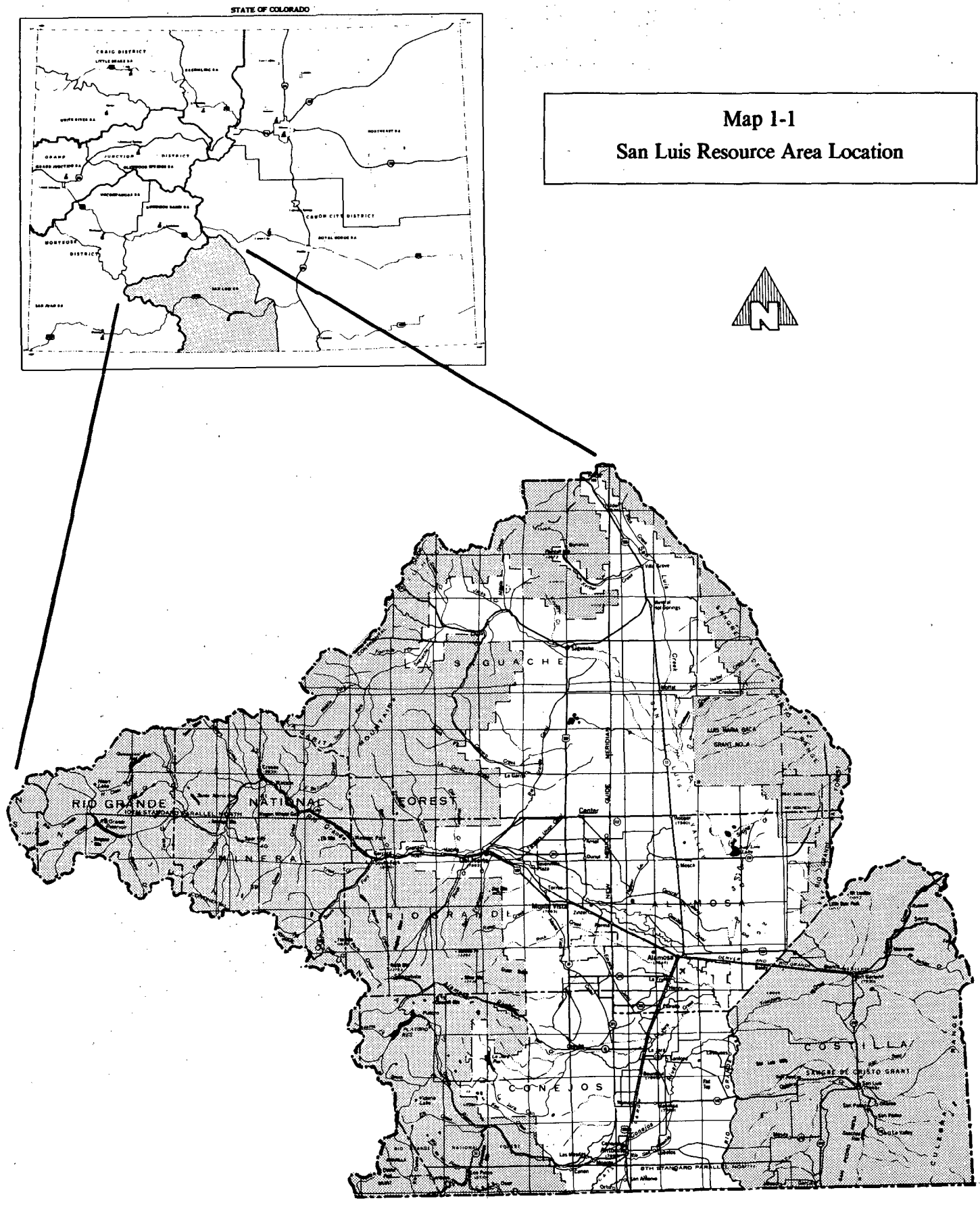
The EIS analyzes the preferred and three other alternatives. The approved RMP (ARMP) will meet the BLM statutory requirement for a master land use plan as mandated by Section 202 of the *Federal Land Policy and Management Act* (FLPMA) of 1976 and the requirements of the *Wild and Scenic River Act* (16 U.S.C. 1271). The ARMP will update and supersede all land use planning in the Saguache and San Luis Management Framework Plans (MFPs) of 1973 and 1975 respectively. MFP decisions are re-analyzed in the Existing Management Alternative in Chapters 3 and 4.

Significant rationale was developed for this updated plan during the plan monitoring process. In May 1984, a San Luis and Saguache MFP Monitoring Report was completed. The report stated that ". . . the area does not have a current plan on which to base Federal actions taken by BLM in the San Luis Valley. From a consistency, conformity, policy, and workability standpoint, the area is without effective planning documentation."

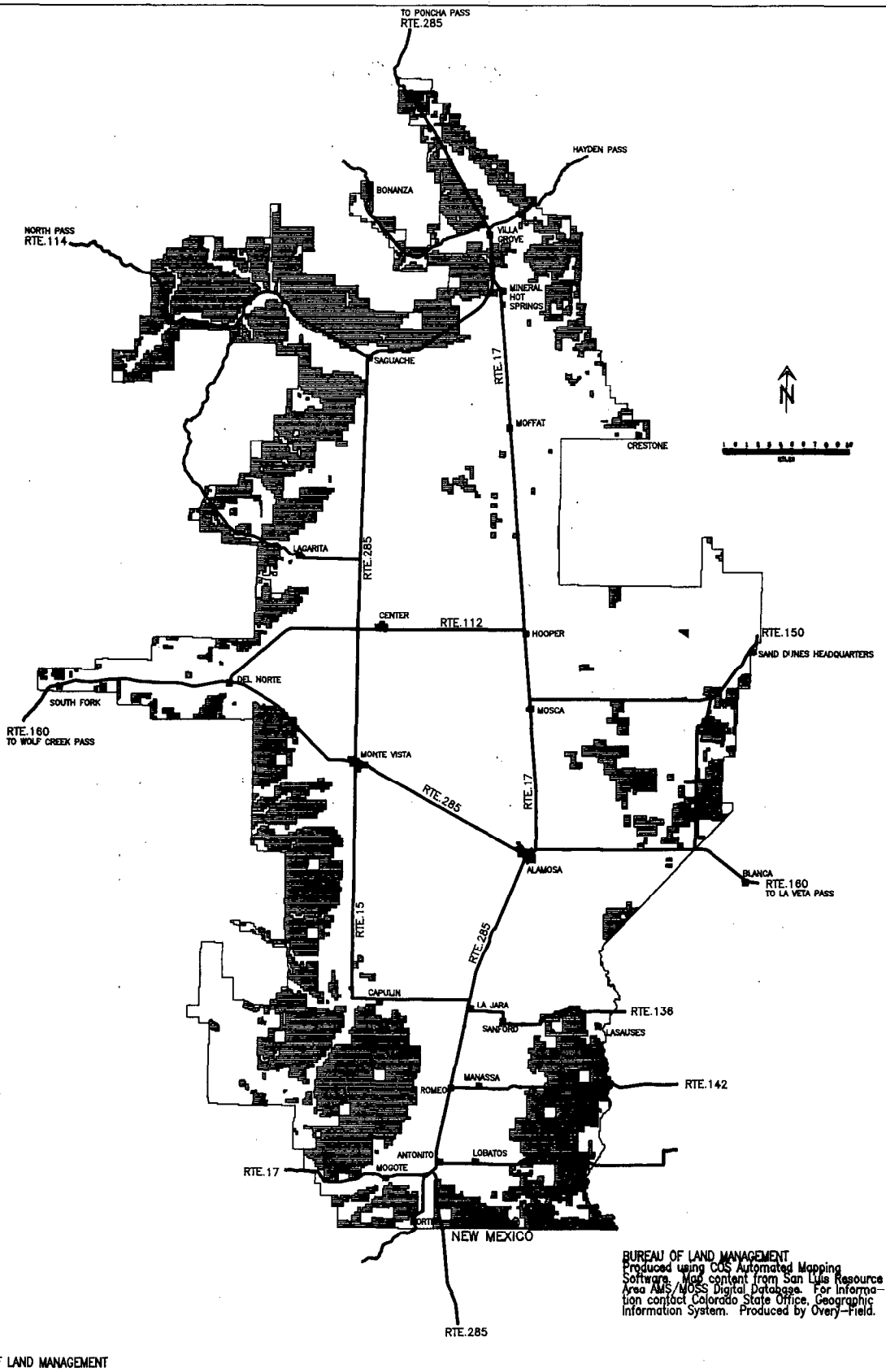
## PLANNING AREA LOCATION

The San Luis Resource Area (SLRA) of the Canon City District encompasses 520,677 acres of BLM surface estate land in the San Luis Valley, which is in the south-central part of Colorado (see Maps 1-1 and 1-2). The valley is approximately 122 miles long and about 74 miles wide extending from the Continental Divide on the northwest to the New Mexico State line on the south. Also, there are an additional 101,926 acres of subsurface mineral estate managed by BLM in the resource area for a total of approximately 621,000 acres (Map 1-3).

For purposes of analysis in this draft RMP, a planning area has been designated, which is bordered on three sides by the Rio Grande National Forest and is within all or part of Saguache, Alamosa, Rio Grande, Conejos, and Costilla Counties. Of the total 1,971,000 acres in the planning area, approximately 54 percent is privately owned, less than 1 percent is managed by the U.S. Forest Service, about 4 percent is managed by the U.S. Park Service, about 2 percent is managed by the U.S. Fish and Wildlife Service, about 11 percent is administered by various state agencies (i.e., Colorado Division of Wildlife, Colorado Land Board Commission, etc.), about 2 percent is managed by other Federal agencies, and about 27 percent is managed by BLM. In addition, the BLM manages an additional 101,926 acres or about 5 percent as subsurface mineral estate, which underlies state and private surface land ownership. Fluid mineral leasing decisions for Federal mineral estate within the Rio Grande National Forest boundary will be the responsibility of the USFS in coordination with BLM and will be addressed in their planning and environmental process.

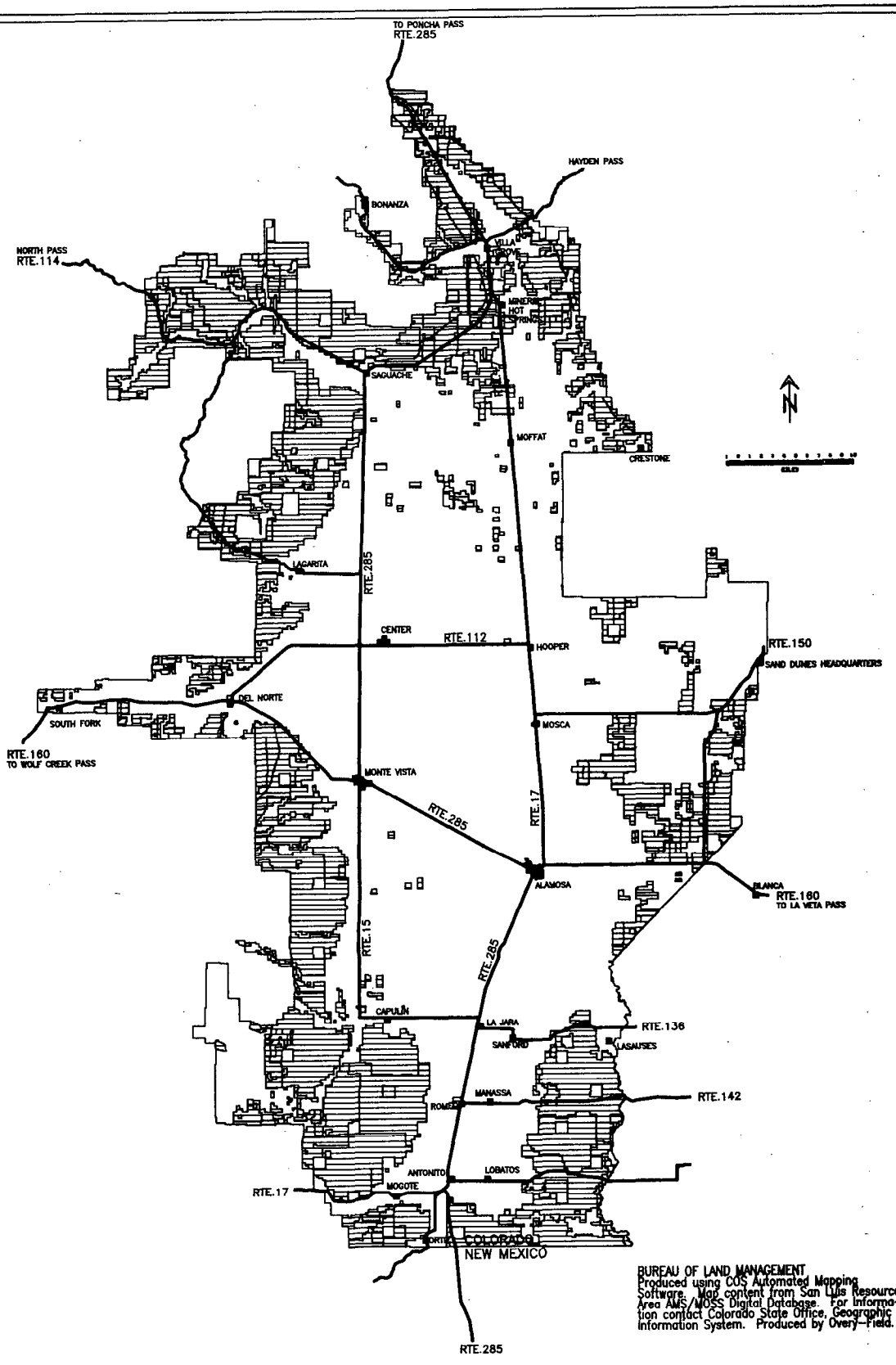



**Map 1-1**
**San Luis Resource Area Location**




Map 1-2
San Luis Resource Planning Area Location

FOR A BETTER PERSPECTIVE OF BLM OWNERSHIP, SEE THE FOLDOUT MAP AT THE BACK OF THE PLAN.




Map 1-3
San Luis Planning Area Mineral Estate

FOR A BETTER PERSPECTIVE OF BLM OWNERSHIP, SEE THE FOLDOUT MAP AT THE BACK OF THE PLAN.

# PLANNING PROCESS DESCRIPTION

## Planning Process

The planning process for this RMP/EIS began in March 1986. During this process, Topics to be Addressed (consisting of issues with conflict, management concerns, and other items to be considered) and Planning Criteria were identified. These topics and criteria have been and will continue to be addressed throughout development of all nine steps of the plan. These steps are summarized in Figure 1-1.

## Planning Schedule

The planning schedule, which will conclude with completion of the approved resource management plan/record of decision (ARMP/ROD) in late 1989, follows:

September 15, 1989 - Draft RMP/EIS mailed out to public, placed in selected libraries, and sent to various BLM offices.

September 29, 1989 - EPA publishes FR Notice and the 90-day public review period begins.

November 1 and 2, 1989 - Public hearings in Denver and Alamosa.

December 26, 1989 - End 90-day public comment period.

June 15, 1990 - Proposed RMP/FEIS mailed out to public.

June 29, 1990 - EPA publishes FR Notice and the 30-day public protest period begins.

July 30, 1990 - End 30-day public protest period.

August 31, 1990 End Governor's consistency review period.

October 8, 1990 - Approved RMP/ROD mailed out to public and plan implementation begins.

## Implementation of the Plan

Implementation will begin when the plan is approved and the record of decision is signed. This implementation will be accomplished basically as described in the Colorado Resource Management Plan User's Handbook, which was completed in June 1986 and in the Canon City District Plan ADP System, developed in June 1988.

During implementation of the plan, if any additional NEPA documentation is required, environmental assessments (EAs) will be prepared. EAs can vary from a simple statement of conformance to the ARMP/ROD through use of applicable parts of the routine EA handbook outline to full use of the EA handbook outline. An EA is the document showing NEPA compliance of a site-specific action, including the record of decision. The amount of involvement, detail, and outline used depends on the resulting significant impacts of the action on the site-specific environment. If necessary, plan amendments will be prepared to update the ARMP before implementation of the site-specific action.

## SUMMARY OF BLM PLANNING PROCESS

| | | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Process Phase | PREPLANNING | NOTICE OF INTENT | IDENTIFY ISSUES | PLANNING CRITERIA | INVENTORY DATA COLLECT | MGMT SITUATION ANALYSIS | ALTERNATIVE FORMULATION | ESTIMATION OF EFFECTS | SELECT ALTERNATIVE | SELECT THE RMP | MONITORING AND EVALUATION |
| PURPOSE | *To establish a commitment to the project at all levels within BLM.<br><br>*To scope out the key elements of project mgmt. | *To get started.<br><br>*To seek public involvement. | *To orient the process on problems/multiple-use conflicts to be addressed in detail.<br><br>*To focus attention on the critical tradeoffs.<br><br>*To ask the questions that must be answered | *To provide sideboards/ constraints on issues to be addressed.<br><br>*To guide development of the RMP.<br><br>*To define the scope of analysis. | *To provide essential facts for making analysis, evaluations, and decisions. | *To describe existing environmental elements and socio-economic conditions.<br><br>*To describe current BLM management.<br><br>*To determine ability of public lands to respond to the issues and concerns.<br><br>*To identify management opportunities and limitations. | *To portray a mix of multiple uses and actions which could resolve the issues and address concerns.<br><br>*To identify full range of options.<br><br>*To provide different answers to the planning questions | *To describe potential impacts and changes that would occur with each alternative.<br><br>*To identify ways to avoid or mitigate the adverse impacts. | *To identify which alternative best resolves the issues.<br><br>*To clearly explain the course of the action BLM proposes to take.<br><br>*To provide the opportunity for public review and comment. | *To select the proposed RMP and approve it considering public review and comment.<br><br>*To document the decision. | *To track implementation of action plan decisions.<br><br>*To help keep the RMP current<br><br>*To determine if implementation is successful in meeting RMP objectives.<br><br>*To assess whether the RMP continues to reflect the best resource management decisions. |
| PRODUCTS | *A "contract" or Preplanning Analysis that includes project support requirements, public participation plan, schedules, team make-up, budget and training needs. | *A Federal Register Notice.<br><br>*Media announcements.<br><br>*Letters to mailing list | *A clear statement of a manageable number of significant issues for internal tracking, review, and inclusion in the RMP | *A complete list for use by interdisciplinary team during process.<br><br>*A summary for public review (usually with the issues in newsletter or other form) and inclusion in RMP | *A collection of data in various forms from all sources: old planning documents, digital data, new inventory results, resource program data and other source material. | *This may be a shelf document or part of the RMP; usually 3 parts are included.<br><br>*Resource Area Profile or the Affected Environment Chapter.<br><br>*Existing Management Situation or "No Action" alternative.<br><br>*Capability Analysis as building blocks for other alternatives. | *Descriptions of several comprehensive resource management alternatives, each of which could be a complete plan.<br><br>*Together with the "No Action" alternative (see phase 4), this makes up the alternatives Chapter of the RMP. | *The Environmental Consequences Chapter of the RMP | *The description of the Preferred Alternative and the rationale for its selection.<br><br>*The Draft RMP/ Draft EIS | *The Proposed RMP/Final EIS. Record of public comment, Governor's review, protests and responses.<br><br>*The Approved RMP and Record of Decision. | *A monitoring plan that describes the standards, methods and intervals for monitoring and evaluating the RMP.<br><br>*The documented results of monitoring including the data and analysis leading to any decision to modify the RMP through plan maintenance, amendment, or preparation of a new plan. |

Figure 1-1

# TOPICS ADDRESSED IN THE PLAN

This plan defines and addresses the issues identified by BLM, other agencies, and the public. These issues, or topics, addressed in this plan were refined and presented to the public for comments. After comments were received, the topics were again refined and finalized, then planning criteria were developed for each topic. These topics were separated into three categories and are defined as:

Issues with conflicts—topics are controversial and have alternatives.

Important management concerns—topics that are either controversial or have alternatives, but not both.

Other considerations—topics that are neither controversial nor different between alternatives, but need to be addressed in the planning analysis.

Issues with conflicts and important management concerns are summarized in Tables 1-1 and 1-2.

Details on planning criteria are in Appendix A.

## Other Considerations

The following topics are neither controversial nor are they expected to vary appreciably among alternatives.

| | |
|---|---|
| Noise | Energy |
| Topography | Water |
| Air Quality | Withdrawals |
| Soils | Vegetation |
| Transportation | Waterpower/Storage |

The criteria for these considerations are generic. Criteria relate each consideration to the RMP Issues with Conflict and Important Management Concerns, propose actions peculiar to each consideration that would aid in addressing these issues and concerns, and comply with needs of other regulatory, judicial, or statutory requirements.

Table 1-1

SUMMARY OF ISSUES WITH CONFLICTS

| Topic | Management Action |
|---|---|
| Land Tenure Adjustment | Identify lands suitable for acquisition or disposal. |
| Rights-of-Way Management | Designate lands suitable, suitable with limitations, or unsuitable for ROW management to minimize conflicts between ROW use and other resources. |
| Public Land Access | Provide access to public lands for public and administrative purposes to improve utilization of the lands and resources. |
| Off Highway Vehicle Use | Designate public lands open, closed, or limited to OHV use. |
| Suitability for Exploration/ Development of Mineral Resources | Designate areas suitable (open to development), suitable with limitations (open to development with stipulations), or unsuitable (closed to development) for mineral explorational development to provide reasonable and necessary consideration of other resource values. |
| Special Management Designations | Consider special management designations for unique areas with special values (to include wild and scenic river analysis). |

## Table 1-2
## SUMMARY OF IMPORTANT MANAGEMENT CONCERNS

| Topic | Description |
|---|---|
| Special Forest/ Wildlife Management | Manage forest areas so harvest practices do not conflict with wildlife cover. |
| Riparian/Wetlands | Manage all riparian and wetlands on public lands (establish, re-establish, and maintain where feasible). |
| Cultural | Manage historic resources and values, cultural values, archaeological values, and paleontological resources on public lands. |
| Fire | Manage for fire protection on public lands. |
| | Utilize wildfire and/or prescribed fire to attain overall land and resource management objectives. |
| Threatened and Endangered Species | Protect T&E plant and and wildlife species. |
| Social/Economics | Consider social/economics in management actions on public lands. |
| Visual Resources | Protect significant visual resources on public lands. |
| Forest and Woodlands | Meet public demand for various forest and woodland products and follow the principles of multiple use and sustained-yield. |
| | Determine cost-effectiveness of silviculture practices including benefits to other resources. |
| Forage | Manage utilization of forage resources for the needs of livestock, wildlife, watershed, and other resource requirements |
| Recreation | Manage important recreational areas and resources on public lands. |
| Wildlife Habitat | Manage game and nongame wildlife habitat on public lands. |
| Noxious Weed Control | Aid in the control of noxious weeds. |
| Water Rights | Acquire water rights where necessary for uses of public lands. |
| Waterpower/Storage | Determine important waterpower and/or water storage sites on public lands. |

# RELATIONSHIP TO OTHER DOCUMENTS AND DECISIONS

## Existing Planning and Environmental Documents

There are currently two land use management plans covering the San Luis Resource Area; the Saguache and San Luis Management Framework Plans (MFPs). These plans provide management direction for most activities and decisions needed for implementation. The objectives and directions in these plans are incorporated into the Existing Management Alternative of this plan.

In addition to the MFPs, several major BLM EAs and EISs for various program activities in the planning area have been completed. These documents are listed in Table 1-3, and these directions are also incorporated into the Existing Management Alternative of this RMP. When the record of decision (ROD) for this ARMP is completed, these existing program directions may be changed by a formal plan amendment.

## Support Documents Prepared During the Planning Process

In addition to this plan, several other support documents were prepared, which either provide background information or focus on a particular resource relative to this planning effort. These are available for review in the San Luis Resource Area and the Canon City District offices (see addresses in the cover letter of this draft RMP/EIS).

The management situation analysis (MSA) summarizes the existing inventory data for each of the resources present on the public lands. This file document provides most of the background information for this plan.

Table 1-3
EXISTING PLANNING AND ENVIRONMENTAL DOCUMENTS FOR PROGRAM ACTIVITIES WITHIN THE PLANNING AREA

| Plan or EA/EIS Title | Program Activity |
|---|---|
| Saguache Management Framework Plan | Overall plan effort for Saguache County portion of BLM lands in the SLRA. |
| San Luis Management Framework Plan | Overall plan effort for Alamosa, Rio Grande, and Conejos Counties portion of BLM lands in the SLRA. |
| San Luis Grazing EIS | Valley-wide program direction (updated in July 1986) for grazing on BLM lands in the SLRA. |
| Canon City District Wilderness EIS | District-wide EIS analyzing the potential of wilderness study areas as additions to the National Wilderness System |
| Canon City District Forest Activity Plan and Programmatic EA | District-wide document analyzing the forest and woodland management 1988-1997. |
| San Luis Oil and Gas Programmatic Environmental Assessment | Valley-wide document analyzing oil and gas development in the SLRA. |
| San Luis Geology and Minerals Report | Valley minerals analysis. |
| Canon City District Fire Management Plan | District-wide fire plan prescription. |

The Oil and Gas Geothermal Technical Report provides additional background information and data for these activities and more detailed analysis of the oil and gas/geothermal resources than has been presented in this plan. The report includes information on the fluid mineral resources in the area and provides documentation on the history and trends of oil and gas development within the planning area. More details are in Appendix B.

The Rio Grande Wild and Scenic River Study Report (Appendix E) provides the background information for analysis to determine the eligibility of the 41.6-mile river segment, which is mostly under BLM management, in the very southern end of the planning area. The study report includes maps, photos, and other documentation on the assessment of the river corridor as it relates to the national criteria for a potential wild, scenic, or recreation river.

The environmental analysis required in the *Wild and Scenic River Act* is included in this draft RMP/EIS. The five affected environmental elements (minerals, wildlife values, recreation, areas of special concern, and waterpower/storage) are analyzed in the DEIS. All other elements and uses would not be affected by the wild and scenic river proposal. Also all valid existing rights (e.g., grazing privileges, leases, water rights) would not be affected by the proposal.

## Other Related Agency Documents

To reduce or eliminate conflict between BLM and other agency land management or land use planning responsibilities in the San Luis Planning Area, other agency documents have been closely reviewed and, where appropriate, information has been used, in the preparation of this plan. In addition, land use plans for areas bordering BLM have also been reviewed and analyzed during the SLRMP planning process to avoid conflicts in land management. These other related agency documents are described in Table 1-4.

Table 1-4
OTHER AGENCY DOCUMENTS

| Agency | Type of Document | Title of Document |
|---|---|---|
| U.S. Forest Service | Resource management plan | Land and Resource Management Plan; Rio Grande National Forest |
| U.S. Forest Service | Regional plan | Rocky Mountain Region |
| U.S. National Park Service | Master and development plan | Great Sand Dunes National Monument Management Plan |
| U.S. Fish and Wildlife Service | Special concern plan | Endangered and Threatened Wildlife and Plants |
| Colorado State Forest Service | Directory | Colorado Forestry Forest Products Directory |
| Colorado State Division of Parks and Outdoor Recreation | Comprehensive plan | Colorado Statewide Comprehensive Outdoor Recreation Plan |
| Colorado Division of Wildlife | Draft waterfowl plan | San Luis Valley Waterfowl Waterbird Wetland Plan |
| | Wildlife plan | Colorado Strategic Plan |
| San Luis Valley Regional Develop ment and Planning Commission | Economic development plan | Region 8 Overall Economic Development Plan |
| Taos Resource Area BLM | Resource management plan | Taos Resource Area Management Plan |
| New Mexico/Colorado Public Services | Environmental analysis | Alternate Corridor Analysis Report for the Proposed Taos/San Luis Valley 345 kV Transmission Project (Colorado-New Mexico Intertie) |

# CHAPTER 2

# AFFECTED ENVIRONMENT

# CHAPTER 2

# AFFECTED ENVIRONMENT

This chapter describes those physical, biological, social, and economic characteristics of the land, water, and air resources administered by the Bureau of Land Management (BLM), San Luis Resource Area (SLRA) of the Canon City District that affect, or are themselves affected by, the topics addressed within this plan. Much of the material in this chapter summarizes information developed in the SLRMP Management Situation Analysis (MSA) and the geographic information system (GIS). GIS is an automated mapping data base system. This information is available for viewing at the resource area office in Alamosa and the district office in Canon City. The Existing Situation Analysis, Resource Area Profile, and Resource Capability Levels in the MSA are more complete, detailed discussions of the environment in the SLRMP planning area.

The purpose of this chapter is to serve as base line data for identifying and analyzing the impacts of the four alternatives in this plan. These impacts are described in chapter 4. The following material describes the 24 resources and resource uses within the SLRMP planning area.

## CLIMATE

The San Luis Resource Area is located in a high valley/ mountainous, continental climate regime characterized by dry air, sunny days, clear nights, precipitation extremes, moderate/high evaporation, and large daily temperature changes. The rugged San Juan Mountains to the west and the Sangre de Cristo Mountains to the east flank the high, wide, and flat San Luis Valley. Extremely frigid conditions and blizzards can occur, but severe weather conditions such as tornadoes, floods, and damaging hail are very rare.

The complex topography of the region causes considerable variation in site-specific temperature, precipitation, and surface winds. Because of this diversity, prolonged onsite monitoring is necessary to specify local conditions. Table 2-1 summarizes monitored values for temperature, precipitation, and frost-free periods. The following description represents a range of climatic conditions throughout the resource area.

Table 2-1
CLIMATIC DATA

| Station | Elevation (ft; Mean Sea Level) | Temperature (degrees F) | | | | | Precipitation (inches) | | | | Frost-free Period | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Extreme Minimum | Mean Minimum | Annual Mean | Mean Maximum | Extreme Maximum | Annual Mean | Monthly Maximum | Monthly Minimum | Mean Snowfall | Days | Begin Date | End Date |
| Alamosa | 7,536 | -42 | 24 | 42 | 59 | 91 | 7.1 | 1.3 | 0.2 | 37 | 98 | 6/01 | 9/07 |
| Blanca | 7,749 | -38 | 25 | 43 | 60 | 97 | 7.8 | 1.6 | 0.2 | 23 | 105 * | 5/27* | 9/11 * |
| Center | 7,683 | -37 | 24 | 42 | 60 | 95 | 7.3 | 1.3 | 0.3 | 28 | 96 | 6/06 | 9/10 |
| Del Norte | 7,884 | -34 | 28 | 43 | 58 | 91 | 10.0 | 1.8 | 0.4 | 46 | 114 | 6/01 | 9/23 |
| Great Sand Dunes, N.M. | 8,120 | -25 | 29 | 44 | 58 | 91 | 10.6 | 2.2 | 0.3 | 37 | 123 | 5/29 | 9/29 |
| Hermit | 9,001 | -40 | 16 | 34 | 53 | 97 | 15.7 | 2.4 | 0.4 | 76 | 11 | 6/27 | 7/08 |
| Manassa | 7,680 | -34 | 23 | 42 | 60 | 94 | 7.5 | 1.5 | 0.2 | 18 | 90 | 6/08 | 9/06 |
| Monte Vista | 7,667 | -38 | 24 | 41 | 59 | 91 | 7.1 | 1.4 | 0.2 | 23 | 72 | 6/12 | 8/23 |
| Saguache | 7,697 | -24 | 27 | 43 | 60 | 93 | 8.8 | 1.7 | 0.2 | 30 | 106 | 6/04 | 9/18 |
| Wagon Wheel Gap | 8,500 | -40 | 16 | 36 | 55 | 96 | 11.9 | 2.3 | 0.4 | 53 | 8 | 6/29 | 7/07 |
| Wolf Creek Pass | 9,425 | -40+ | 25 | 38 | 51 | 88 | 40.8 | 4.9 | 1.1 | 363 | 68 * | 6/23* | 8/30 * |

+ U.S. Department of Commerce (1982)
* U.S. Department of Commerce (1986)
Source: PEDCO Environmental, Inc. (1981)

Temperature (degrees Fahrenheit) varies mostly with elevation, and to a lesser extent, local microclimate. Summer temperatures usually range from lows in the 40s to highs in the 70s (mountains) and 80s (valleys). In winter, cold air often sinks down the mountains, filling the San Luis Valley and making it as cold as, or colder than, the mountains. Winter temperatures typically range between zero degrees and the mid-30s. Extreme temperatures have been as low as -42 degrees and as high as 97 degrees. At higher elevations, freezing temperatures and snowfall are possible year around, with snow accumulation likely from September to May. At lower elevations, freezing temperatures are likely from October to May with snow accumulation from October to April.

Annual precipitation (Map 2-1) is highly variable, primarily because of the orographic (mountain-related) effect of the San Juan Mountains. Within the resource area, annual precipitation is among the highest and lowest in Colorado; Wolf Creek Pass (40.8 inches) and Alamosa (7.1 inches). Except for areas with extreme snowpack, most precipitation comes from summer thunderstorms. Snowfall varies from around 20 inches in the lower elevations to over 360 inches on Wolf Creek Pass; mountainous accumulation may vary from 60 to 80 inches.

Upper-level winds prevail from the southwest, and are not normally modified as they blow across the San Luis Valley. However, the diverse and rugged terrain of the surrounding mountains results in complex wind flows and surface winds. Pressure gradient winds may be channeled or forced around hills; however, without strong gradient flows, daily upslope/downslope winds are predominant. Upslope winds usually occur on sunny mornings when the air at higher elevations heats rapidly and rises. Downslope winds occur when the air near the ground becomes cool and dense, sinking downward along drainages. Similar light daily winds occur along the Rio Grande drainages.

The extent that vertical and horizontal mixing takes place is related to the atmospheric stability and mixing depth. Unstable conditions normally result from strong surface heating, typical of summer afternoons, and produce vertical winds. Neutral conditions reflect a breezy, well-mixed atmosphere. Stable conditions are enhanced by rapid radiative cooling and downslope drainage, producing the least amount of dispersion.

Because of the relatively level terrain throughout the San Luis Valley, dispersion is normally good in spring and summer, but is limited in the winter. Inversions, which trap pollutants within a layer of air, are formed under stable conditions. Moderate summer inversions are typical during the evening and dissipate at dawn; however, winter inversions are stronger and last longer. Inversions are enhanced by weak pressure gradients, cold clear nights, snowcover, and lower elevations. Seasonal stability data are presented in Table 2-2.

Table 2-2
SELECTED ATMOSPHERIC DISPERSION DATA, ALAMOSA, COLORADO

| | Stability Frequency (percent) | | | Approximate Mixing Depth (m) | |
|---|---|---|---|---|---|
| Season | Unstable | Neutral | Stable | Morning | Afternoon |
| Annual | 29 | 34 | 37 | 350 | 2,300 |
| Winter | 21 | 27 | 52 | 300 | 1,300 |
| Spring | 26 | 47 | 27 | 450 | 2,900 |
| Summer | 39 | 31 | 30 | 350 | 3,200 |
| Fall | 29 | 33 | 38 | 250 | 2,000 |

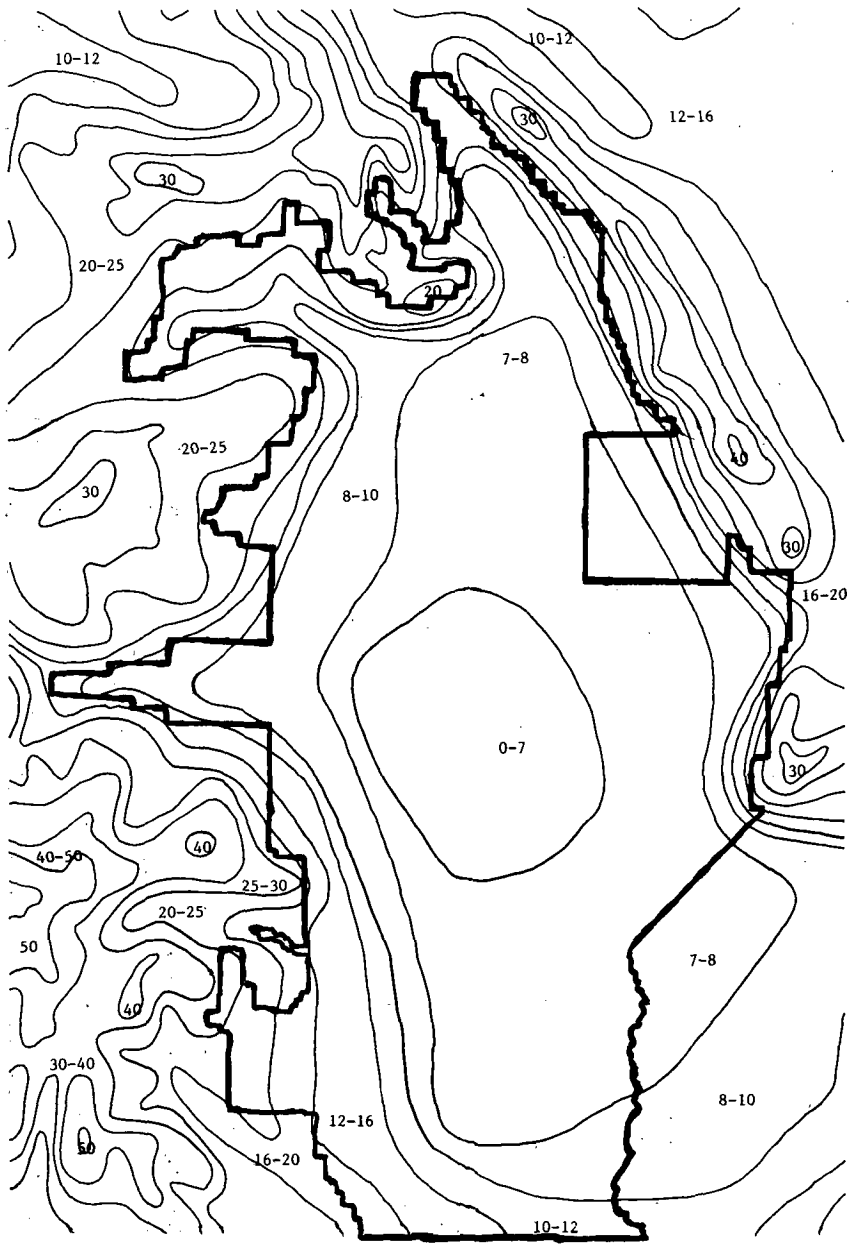
Source: PEDCO Environmental, Inc. (1981).
Note: Mixing depths are statewide averages.

# AIR QUALITY

The existing air quality throughout the San Luis Resource Area can only be surmised, since no monitoring data are available for most pollutants. The air quality of the study area, however, is believed to be typical of undeveloped regions in the western United States; ambient pollutant levels are usually near or below the measurable limits. Locations vulnerable to decreased air quality from extensive development include the immediate operation areas (milling operations, power plants, etc.) and local population centers (farm tilling, residential woodsmoke, etc.).

## Air Quality Regulations

National ambient air quality standards (Table 2-3) limit the total amounts of specific pollutants allowed in the atmosphere: carbon monoxide (CO), lead, nitrogen dioxide ($NO_2$), ozone, sulfur dioxide ($SO_2$), particulate matter (total suspended particulates—TSP, and inhalable particulates—$PM_{10}$). State standards include these parameters, but may also be more stringent (i.e., the 3-hour $SO_2$ standard). These standards were established to protect public health (primary standards) and public welfare (secondary standards).




SCALE 1:1000000.
MOSS - BLM/CSO

CONTOUR INCREMENTS

| | |
|---|---|
| 0–7 INCHES | 20–25 INCHES |
| 7–8 INCHES | 25–30 INCHES |
| 8–10 INCHES | 30–40 INCHES |
| 10–12 INCHES | 40–50 INCHES |
| 12–16 INCHES | >50 INCHES |
| 16–20 INCHES | |

FOR A BETTER PERSPECTIVE OF BLM OWNERSHIP SEE THE FOLDOUT MAP AT THE BACK OF THE PLAN.

## Map 2-1
## Precipitation

BUREAU OF LAND MANAGEMENT
Produced using COS Automated Mapping Software. Map content from San Luis Resource Area AMS/MOSS digital database. For information contact Colorado State Office, Geographic Information System. Produced by Overy–Field.

# Table 2-3
# STATE AND FEDERAL AIR QUALITY STANDARDS
## (micrograms per cubic meter)

| | | Ambient [b] | | | | Increment [c] | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Averaging [a] | Federal | | Colorado | | Federal | | | Colorado | | |
| Pollutant | Time | Primary | Secondary | Primary | Secondary | Class I | Class II | Class III | Category I | Category II | Category III |
| Carbon Monoxide | 8 hours | 10,000 | 10,000 | 10,000 | - | - | - | - | - | - | - |
| | 1 hour | 40,000 | 40,000 | 40,000 | - | - | - | - | - | - | - |
| Lead | Quarterly | 1.5 | 1.5 | - | - | - | - | - | - | - | - |
| Nitrogen Dioxide | Annual (Arith.) | 100 | 100 | 100 | - | - | - | - | - | - | - |
| Oxidants (Ozone) | 1 hour | 235 | 235 | 160 | - | - | - | - | - | - | - |
| Sulfur Dioxide | Annual (Arith.) | 80 | - | - | - | 2 | 20 | 40 | 2 | 10 | 15 |
| | 24 hours | 365 | - | - | - | 5 | 91 | 182 | 5 | 50 | 100 |
| | 3 hours | - | 1,300 | 700 | - | 25 | 512 | 700 | 25 | 300 | 700 |
| Total Suspended Particulates | Annual (Geom.) | 75[d] | 60[e] | 75 | 60[e] | 5 | 19 | 37 | - | - | - |
| | 24 hours | 260[d] | 150[d] | 260 | 150 | 10 | 37 | 75 | - | - | - |
| Inhalable Particulates ($PM_{10}$) | Annual (Arith.) | 50 | 50 | [f] | [f] | - | - | - | - | - | - |
| | 24-hours | 150 | 150 | - | - | - | - | - | - | | |

Sources: National Primary and Secondary Ambient Air Quality Standards (40 CFR 50 et seq, as revised July 1, 1987).
Requirements for Preparation, Adoption and Submittal of Implementation Plans (40 CFR 51.166, as revised July 1, 1987).
Approval and Promulgation of Implementation Plans (40 CFR 52.21, as revised July 1, 1985).
Code of Colorado Regulations (Volume 5, Part 14, as amended May 27, 1980).

[a] Short-term standards (those other than Annual and Quarterly) are not to be exceeded more than once each year, except the Federal ozone and $PM_{10}$ standards. Under Federal regulations, the "expected number of days" with ozone or $PM_{10}$ levels above the standard is not to be exceeded more than once per calendar year.

[b] Ambient standards are the absolute maximum level allowed to protect either public health (primary) or welfare (secondary).

[c] Incremental (Prevention of Significant Deterioration) standards are the maximum incremental amounts of pollutants allowed above the base line in regions of clean air.

[d] Federal TSP standards were superseded by the Federal $PM_{10}$ standards, effective July 31, 1987.

[e] The Colorado annual secondary TSP standard was established as a guide in assessing implementation plans to achieve the 24-hour standard.

[f] Colorado is developing $PM_{10}$ standards at least as stringent as the Federal standards.

For many years, the particulate matter standard included all size ranges of particulates (thus total suspended particulates). Measured values were dominated by fugitive (wind blown) dust particles, which are larger than those produced in combustion processes. These particles settled relatively quickly, and presented a minimal health threat. The Environmental Protection Agency (EPA) has recognized these limitations by setting new standards for particulates less than 10 microns in diameter, commonly called inhalable particulates and abbreviated $PM_{10}$. The TSP standards may be phased out over time.

Areas that consistently violate minimum Federal standards because of man-caused activities are classified as "nonattainment" areas, and a plan must be implemented to reduce ambient levels below the maximum pollution standards. Under the EPA "Fugitive Dust Policy," areas that violate the TSP ambient air quality standards, but lack any significant industrial particulate sources and have a population less than 25,000, are designated as "unclassified" (i.e., neither "attainment" nor "nonattainment"). "Unclassified" areas are generally exempt from having to meet the offset provisions, retrofit controls, and new source control requirements established for "nonattainment" areas by the *Clean Air Act.*

To protect areas not classified as "nonattainment," Congress established a system for the prevention of significant deterioration (PSD) through the *Clean Air Act Amendments* of 1977. Areas were classified by the additional amounts of allowable TSP and $SO_2$ degradation. PSD Class I areas, predominantly national parks and certain wilderness areas, have the greatest limitations; virtually any degradation would be significant. Areas where moderate, controlled growth can take place are designated as PSD Class II. PSD Class III areas are those areas that allow the greatest degree of impacts. Colorado established a similar program limiting additional amounts of $SO_2$, and lands are classified Category I, Category II and Category III (corresponding to greater permissible levels of $SO_2$).

## Existing Air Quality

The entire resource area has been designated as either "attainment" or "unclassified" for all pollutants; most of the area has been designated PSD Class II. Within the resource area, only the Great Sand Dunes, Weminuche, and La Garita Wilderness Areas are PSD Class I/Colorado Category I Areas (Map 2-2). For the most part, the air quality in the San Luis Valley is excellent.

Although there is no gaseous pollutant monitoring in the resource area, levels are estimated to be low and within standards. Ozone levels in the Rocky Mountain West are relatively high, but of unknown origin. The true reason for elevated ozone values is uncertain, but elevated concentrations may be a result of long-range transport from urban areas, subsidence of stratospheric ozone, or photochemical reactions with natural hydrocarbons. Occasional peak concentrations of CO and $NO_2$ may occur in the immediate vicinity of combustion equipment.

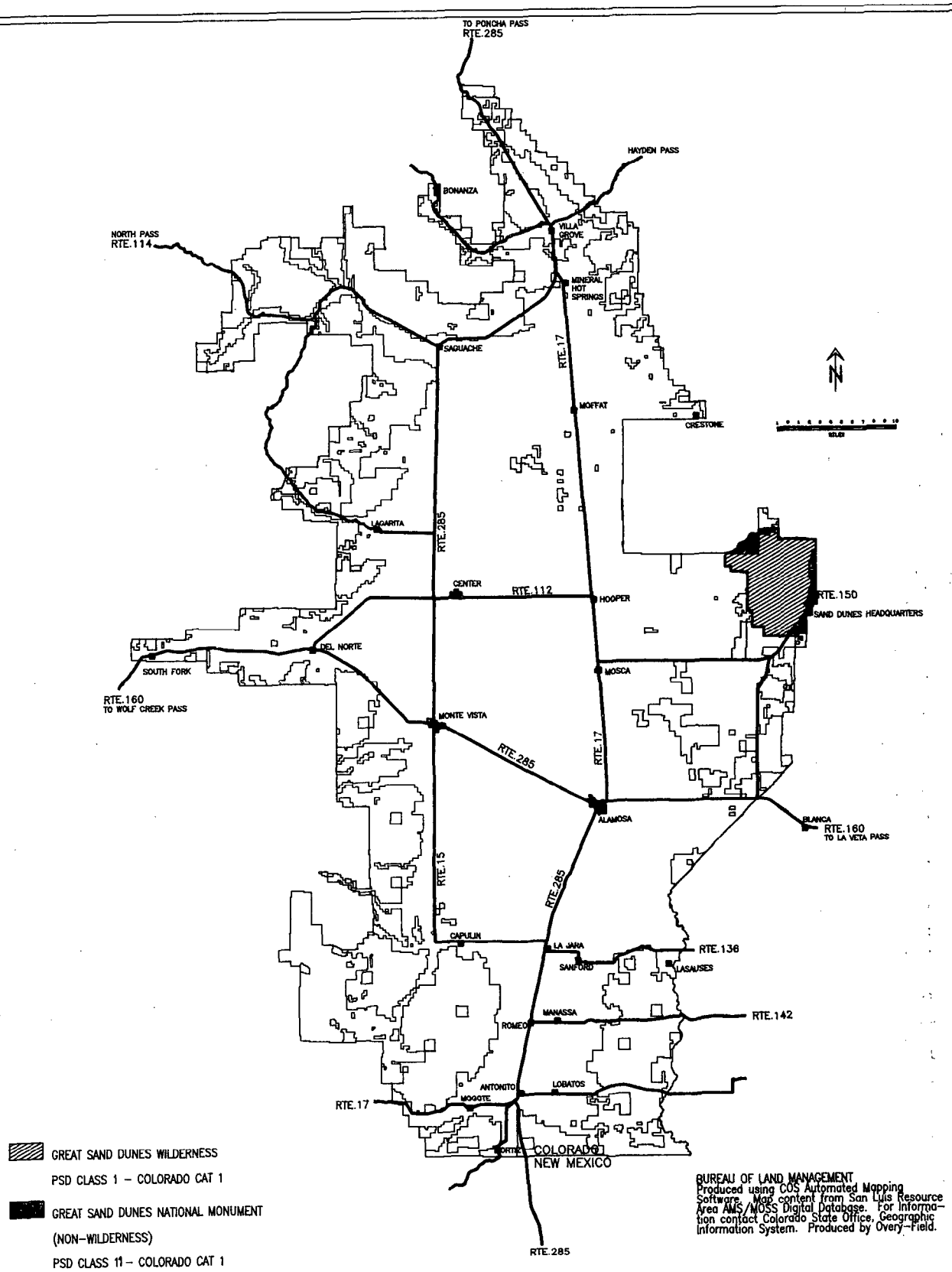
Particulate matter concentrations are expected to be higher near towns because of local combustion sources ($PM_{10}$) and unpaved roads (TSP); significant regional TSP levels are probably due to fugitive dust (primarily wind blown). Average and extreme particulate concentration data collected at Alamosa are shown in Table 2-4.

Table 2-4
SELECTED PARTICULATE CONCENTRATION DATA (TSP)
(micrograms per cubic meter)

| Station Name/Type | Year | No. Obs. | Annual Geo. Mean | 2nd 24-hr Max. |
|---|---|---|---|---|
| Alamosa/Urban | 1987 | 57 | 48 | 101 |
| | 1986 | 58 | 50 | 106 |
| | 1985 | 67 | 49 | 128 |
| | 1984 | 81 | 52 | 146 |
| | 1983 | 88 | 51 | 235 [a] |
| | 1982 | 88 | 52 | 145 |

[a] Violation of Ambient Air Quality Standards.
Source: Colorado Department of Health, n.d.

PSD Class I regulations also address the potential for impacts to air quality related values (AQRVs). These AQRVs include visibility, odors, and impacts to flora, fauna, soils, water, geologic, and cultural features. A possible source of impact to AQRVs is acid precipitation. Mechanisms of acid precipitation formation are currently under study; preliminary results have correlated ambient sulfuric and nitric acids and combustion by-products (sulfates and nitrates). Average and extreme acid precipitation data (wet deposition pH) measured at Alamosa are shown in Table 2-5.




**Map 2-2**
**Air Quality Area**

FOR A BETTER PERSPECTIVE OF BLM OWNERSHIP, SEE THE FOLDOUT MAP AT THE BACK OF THE PLAN.

Table 2-5
SELECTED ACID PRECIPITATION DATA ALAMOSA, COLORADO
(pH)

| | Winter | | Spring | | Summer | | Fall | | Annual | |
|---|---|---|---|---|---|---|---|---|---|---|
| Year | # Obs | 1st Mean | # Obs | 1st Mean | # Obs | 1st Mean | # Obs | 1st Mean | # Obs | 1st Mean |
| 1987 | 13 | 5.80 | 13 | 5.86 | 13 | 5.16 | 13 | 5.26 | 52 | 5.42 |
| 1986 | 13 | 5.00 | 13 | 5.97 | 13 | 5.32 | 13 | 5.03 | 52 | 5.28 |
| 1985 | 13 | 5.91 | 13 | 5.45 | 13 | 5.21 | 13 | 5.33 | 52 | 5.29 |
| 1984 | 13 | 6.02 | 13 | 6.73 | 14 | 5.36 | 13 | 5.48 | 53 | 5.51 |
| 1983 | 13 | 5.81 | 13 | 5.93 | 13 | 5.50 | 13 | 5.51 | 52 | 5.58 |
| 1982 | 13 | 5.31 | 13 | 6.13 | 13 | 5.68 | 13 | 5.47 | 52 | 5.59 |

Source: Natural Resources Ecology Laboratory, n.d.
Note: Precipitation weighted averages. The natural pH of precipitation is approximately 5.6.

# SOILS

Soils in the San Luis Resource Area are described in the following four soil survey reports published by the USDA, Soil Conservation Service: Alamosa County Area (1973), Rio Grande County Area (1980), Conejos County Area (1980), and Saguache County Area (1984). Copies of these reports are available in the San Luis Resource Area Office.

Over 100 different soil types are present in the planning area and reflect a variety of parent materials, topographic positions, and climatic regimes. Most of these soils present few problems for range, forestry, wildlife, or recreation management. There are some limitations, however, on most of these soils for activities such as road building, mineral development, sanitary landfills, reservoir constructions, etc. Erosion can occur on all of these soils if the vegetative cover is removed. Seven soil types are especially susceptible to erosion.

The Commodore and Bushvalley series are rated "severe" for water erosion susceptibility. These two soil types cover 23,400 acres of the planning area, or about 5 percent of the total.

The Corlette, Costilla, Cotopaxi, Dune Land, and Space City series are rated "severe" for wind erosion susceptibility. These soil types cover approximately 17,900 acres of BLM land, or about 3 percent of the total.

The Commodore soils occur in the steeper foothills of the Sangre de Cristo Mountains, running in a band from Mount Blanca to Poncha Pass. The parent materials are metamorphic and igneous rocks. Bushvalley soils occur in Saguache and Conejos Counties. In Saguache County, these soils are located near Poncha Pass, in upper Kerber Creek, in the hills north of Saguache Creek, and in the upper reaches of San Juan, Cottonwood, and Biedel Creeks. In western Conejos County, Bushvalley soils are in a band running south from Chicito Peak to Los Mogotes. The parent materials for these soils are volcanic rocks.

The five soil series highly susceptible to wind erosion are all located along the eastern edge of the San Luis Valley floor in Saguache and Alamosa Counties. These soils are formed from eolian sand and sandy alluvium.

Evidence of past accelerated erosion exists in many parts of the resource area, especially on the western side of the San Luis Valley. Currently, most of these areas are eroding very slowly with a gradual trend toward stabilization.

In the southwestern part of the resource area, about 700 acres of the Bighorn Grazing Allotment are still actively eroding.

Elsewhere, several drainage bottoms supported riparian vegetation before erosion resulted in channel downcutting and lowering of the water table. A complete inventory of such areas has not been made; however, three drainages (Ford Creek, Poison Gulch, and Sanderson Gulch) appear to have good potential for restoration of the riparian vegetation community.

CHAPTER 2

# WATER RESOURCES

## Surface Water

The total watershed area of the San Luis Valley is about 5 million acres. Within this area, there are approximately 516,000 acres of BLM land or about 10 percent of the total. These lands are not important from a water production standpoint. Average annual runoff from BLM lands has been estimated at 35,000 acre-feet (Gifford et. al., 1975) or about .85 inch. This contrasts with water yields of over 30 inches from the high altitude headwater areas.

There are 56 perennial streams within the planning area, none of which originate on BLM land. The combined length of these streams totals about 630 miles, of which 73.5 miles pass through BLM land.

Drainages originating on BLM lands are either ephemeral or intermittent; most are ephemeral. Runoff is usually the result of intense summer thunderstorms. In heavy snow years, however, spring snowmelt can produce significant runoff. Flow in these channels is reduced by heavy transmission losses, primarily by percolation into the ground water system. Surface runoff from these drainages rarely reaches perennial streams.

## Ground Water

The floor of the San Luis Valley is underlain by water-bearing sedimentary deposits that are miles thick. Two major aquifer systems are present. Unconfined (water table) ground water is present at shallow depths practically anywhere on the valley floor. This aquifer is underlain by a huge, complex, confined (artesian) aquifer system. The confined aquifer produces large quantities of good quality water. Since leakage occurs between the two systems, development of either aquifer has an effect on the other.

The occurrence of ground water is much more variable around the fringes of the valley floor. Along the base of the Sangre de Cristo Mountains, ground water is abundant in alluvial and colluvial deposits and is also in sedimentary, igneous, and metamorphic rocks. The western side of the valley is surrounded by volcanic formations and water can occur in these rocks and in underlying igneous and alluvial formations. Most wells located above the valley floor yield relatively small quantities of good quality water. Approximately 100 springs have been located on BLM lands, most of which are concentrated in the northern end of the valley. BLM withdraws less than 7,000 acre-feet of ground water (including the Blanca Wildlife Habitat Area). This is less than 1 percent of the total 750,000 acre-feet annual withdrawal.

## Water Quality

All of the perennial streams passing through BLM lands have good to excellent quality water. The exception is Kerber Creek, which passes through about one-half mile of BLM land and is heavily polluted from mining wastes in the privately owned Bonanza Mining District. The quality of ground water is generally very good. The exception, however, is the unconfined aquifer of the valley floor. In many locations, this aquifer contains high levels of dissolved solids.

# GEOLOGY, TOPOGRAPHY, AND MINERALS MANAGEMENT

## Geology and Topography

The San Luis Valley (SLV) is part of the much larger Rio Grande Rift Zone, which extends from southern New Mexico northward through the San Luis and Upper Arkansas Valleys to its northern termination near Leadville, Colorado. This intermountain valley opens southward towards New Mexico and is approximately 150 miles long and 50 miles wide. The SLV is bordered on the east by the linear Sangre de Cristo Mountains, the result of extensive block faulting during the Laramide Orogeny. This faulting has resulted in the placement of Precambrian basement, Paleozoic sedimentary, and Tertiary intrusive rocks in contact with Tertiary valley-fill deposits. The western side of the SLV is flanked by the San Juan Mountains, the result of extensive Tertiary volcanism. In sharp contrast with the steeply faulted eastern side of the valley floor, the Oligocene volcanic rocks of the San Juans gently dip eastward into the valley floor where they are interbedded with valley-fill deposits. The subsurface of the valley itself is broken by two major horst blocks that essentially bisect the basin from Saguache, Colorado, southward to the New Mexico border. The southernmost horst is the result of block faulting, which has brought Oligocene volcanic rocks to the surface forming the San Luis Hills. Extending north from this structure is the easterly tilted, deeply buried Alamosa Horst composed of Precambrian age rocks. On either side of this horst are two deep basins; the Baca Graben to the east and the Monte Vista Graben to the west. Estimated depths to Precambrian

basement in these basins are 19,000 and 10,000 feet respectively (Burroughs, 1981).

Overlying these basement blocks is a thick sequence of Tertiary age valley-fill sediments and volcanic rock. The absence of Paleozoic and Mesozoic age sediments within the larger portion of the San Luis Valley reflects the fact that throughout much of geologic time it was a positive feature.

The San Luis Valley is divided into five distinct physiographic provinces (Upson, 1939); (1) the Alamosa Basin, which is a broad almost featureless plain of alluvial valley-fill; (2) the San Luis Hills, which exhibit rugged hills and mesas of eroded volcanic rock; (3) the Taos Plateau, which consists of widespread thick basalt flows; (4) the Costilla Plains, which, though similar to the Alamosa Basin, differs in that this is an erosional feature rather than a depositional one; and (5) the Culebra Re-entrant, which is a topographically diverse area with elevated foothills near the mountains, an eroded central depression, and a prominent mesa toward the valley center.

## Fluid Minerals

**Oil and Gas:** The Bureau of Land Management administers oil and gas resources on approximately 621,000 acres within the SLRA (520,677 acres are BLM surface lands). As of December 1987, approximately 250,000 acres were under lease. There were no producing structures within the planning area until recently (1985) when an oil and gas discovery from a fee well established the San Luis Basin as a producing province. In March 1986, BLM approved the South Fork Oil and Gas Development Contract involving approximately 770,000 acres of U.S. Forest Service, BLM, and State of Colorado lands in Archuleta, Conejos, Mineral, Rio Grande, and Saguache Counties. This development contract defines exploration objectives, sets time frames, and establishes financial expenditure requirements for the participating parties.

This contract does not require the drilling of exploration wells, and geophysical investigations have so far been the principal method utilized in meeting the exploration requirements. This is reflected in the fact that an average of five notices per year for geophysical operations have been received in the SLRA since 1985; however, during the period 1975 to 1985 there were no permits filed. Exploration drilling within the planning area has been extremely limited with only 20 wells (2 Federal) completed in the approximately 2,500 square miles of the basin. This basic lack of exploration has essentially left the basin a frontier region for oil and gas exploration with a low to moderate potential for oil and gas resources (Map 2-3a).

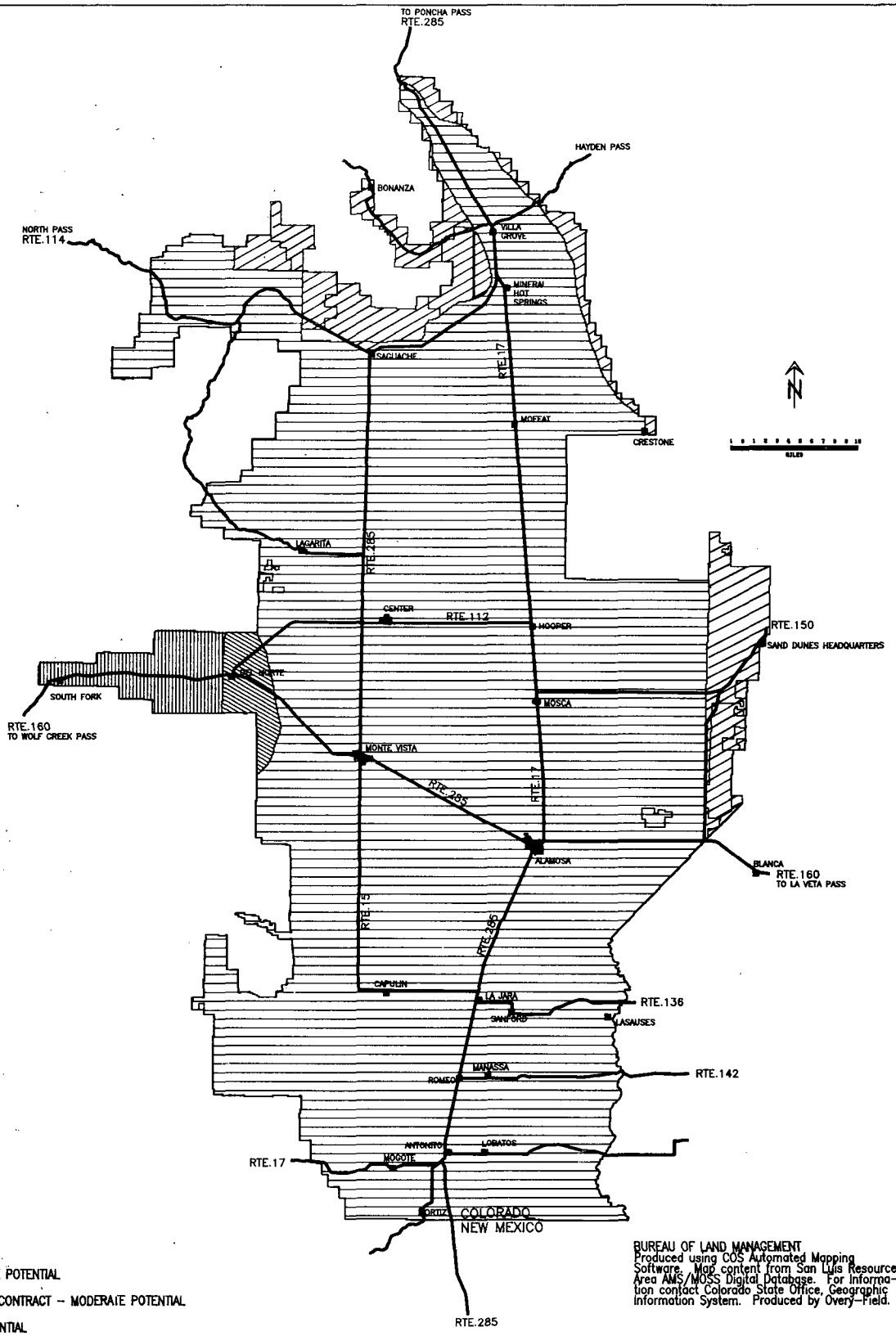
The San Luis Resource Area can be broken into two separate areas for ease of discussion concerning the oil and gas resource potential. These areas are the San Luis Basin and the San Juan Sag, and a short discussion of each follows:

***San Luis Basin:*** The faulting and rifting of the Sangre de Cristo uplift resulted in the formation of the San Luis Basin. This basis was then filled by Tertiary clastic and volcanic rocks to a depth of approximately 20,000 feet adjacent to the Sangre de Cristo Mountains. This basin fill can be divided into four units consisting in descending order as the Alamosa Formation, the Santa Fe Formation, an unnamed Paleocene to Eocene unit, and the Vallejo Formation. Potential trapping mechanisms consist of pinchouts and truncations, fault traps, and structural closures.

***San Juan Sag:*** This foreland basin, formerly adjacent to and west of the Laramide Sangre de Cristo Uplift, remained intact following formation of the San Luis Basin to the east. This basin was then concealed by more than 10,000 feet of volcanic and volcaniclastic rock with only a small window of Creataceous rock exposed near Quartz Creek to indicate the potential sedimentary sequence buried beneath this volcanic cover. The potential stratigraphic sequence beneath the volcanic cover could involve Paleozoic (Permo-Pennsylvanian), Jurassic, Cretaceous, and Tertiary sediments. Recent exploration drilling has confirmed the presence of a sedimentary sequence for this region. The completion of the Kirby Petroleum Company No. 1 Jynnifer well northwest of Del Norte, Colorado, with an initial production of 30 barrels of oil and 80 MCFGPD, established the first production of oil and gas within the San Luis Valley.

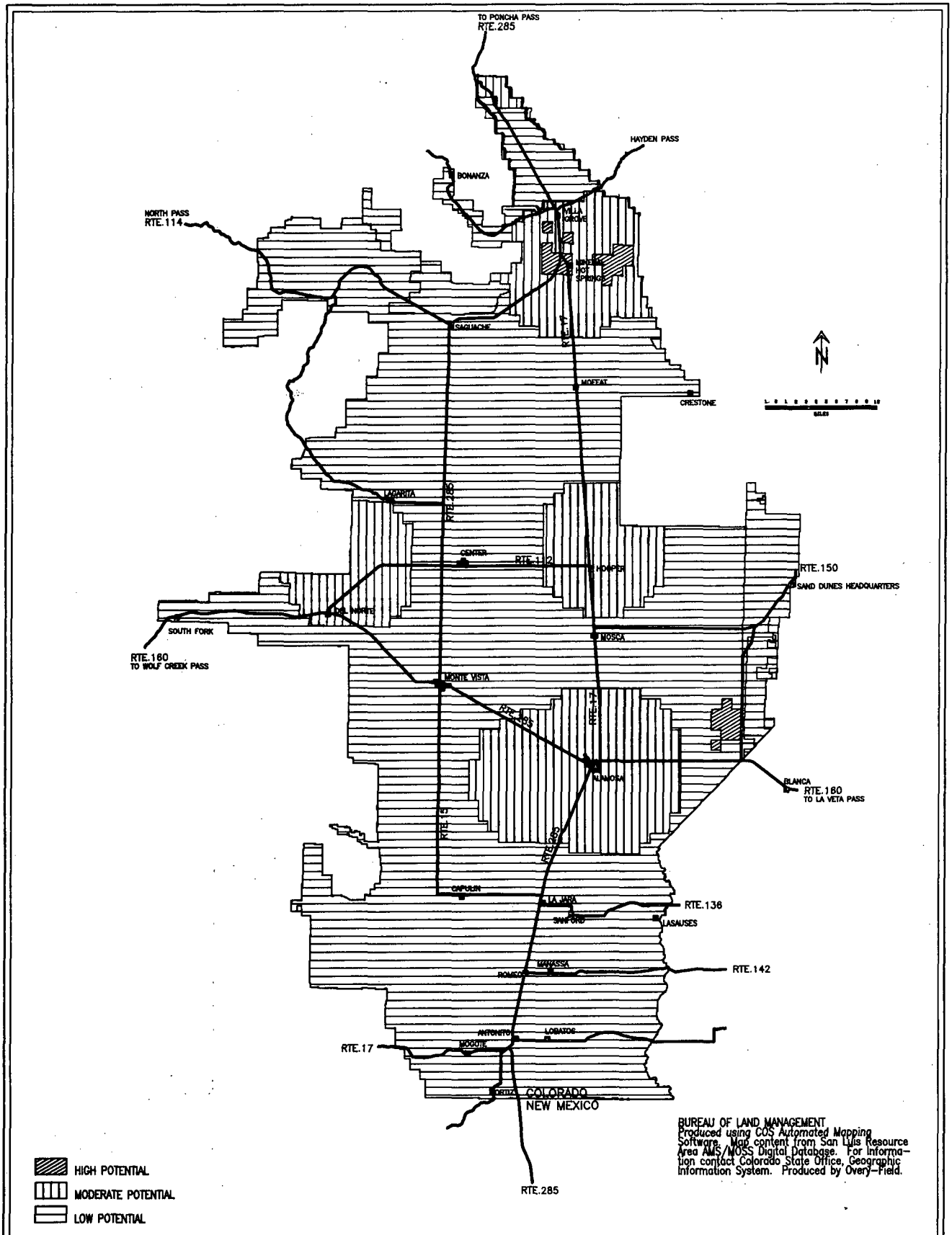
**Geothermal:** The San Luis Valley as indicated is a structural, sediment-filled basin within the Rio Grande Rift Zone (Map 2-3b). This rift zone represents one of the more promising geothermal resource areas in Colorado because of: (1) recent volcanism and other igneous activity; (2) tectonic activity resulting in numerous faults extending to depth; (3) high heat flow values present; (4) good reservoir rocks and a trapping mechanism; and (5) a good source of available water. With the presence of these features essentially located throughout the basin, the potential for the presence of this resource is evident; however, a determination of specific areas for development is difficult because of a lack of available subsurface and geophysical data. The use of surface expressions in the form of hot springs, therefore, is the most readily available means for identifying areas of geothermal potential. Table 2-6 lists the currently known geothermal springs and wells within the San Luis Planning Area.

As of December 1987, there was one geothermal lease currently existing in the planning area consisting of 2,242




Map 2-3a
Leasable Minerals—Oil and Gas

FOR A BETTER PERSPECTIVE OF BLM OWNERSHIP, SEE THE FOLDOUT MAP AT THE BACK OF THE PLAN.




FOR A BETTER PERSPECTIVE OF BLM OWNERSHIP, SEE THE FOLDOUT MAP AT THE BACK OF THE PLAN.

## Map 2-3b
## Leasable Minerals—Geothermal

Table 2-6
GEOTHERMAL SPRINGS AND WELLS

| Name | Location | Average Temp | Average Discharge |
|---|---|---|---|
| Mineral Hot Springs | Sec. 12, T.45N., R.9E., NMPM | 60°C | 10 GPM |
| Valley View Hot Springs | Sec. 36, T.46N., R.10E., NMPM | 35°-37°C | 60 GPM |
| Shaws Warm Spring | Sec. 33, T.41N., R.6E, NMPM | 30°C | 34-50 GPM |
| Sand Dunes Swimming Pool Hot Water Well | Sec. 27, T.41N., R.10E., NMPM | 44°C | N/A |
| Splash Land Hot Water Well | Sec. 34, T.38N., R.10E., NMPM | 40°C | N/A |
| Dexter Warm Spring | Sec. 8, T.35N., R.11E., NMPM | 20°C | 5 GPM |
| McIntire Warm Spring | Sec. 18, T.35N., R.11E., NMPM | 10°-14°C | N/A |

(Pearl and Barrett 1978)

acres with no recent interest in new leasing. No geothermal exploration nor drilling activity has occurred on BLM lands within the planning area in the past 10-year period.

**Coal and Nonenergy Leasable Minerals:** There are no coal nor nonenergy leasable minerals known to be present in the planning area.

## Locatable Minerals

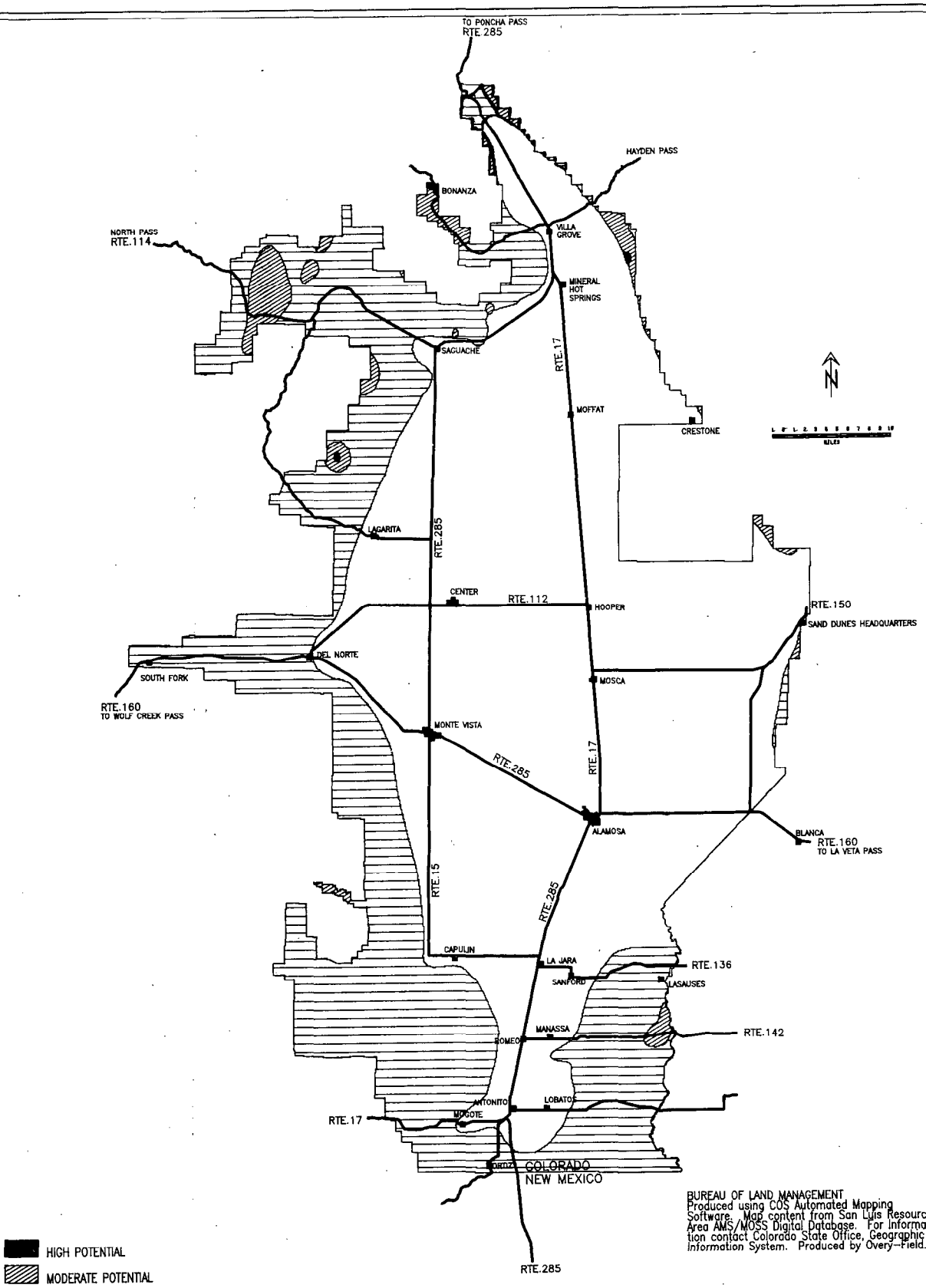
The San Luis Valley and the adjacent San Juan and Sangre de Cristo Mountains have long been an area of focus for locatable mineral exploration and production (Map 2-4). Locatable minerals in the resource area include, but are not limited to, gold, silver, lead, zinc, copper, tungsten, iron, molybdenum, uranium, thorium, perlite, and turquoise. This highly diverse resource of locatable minerals exhibits a moderate to high potential identified in Table 2-7 showing the mining districts and mineralized areas.

Presently there are two active mining operations within the planning area. One site is the Crystal Hill Mine near La Garita, Colorado, which is a heap leaching gold project; the other is the King Turquoise Mine east of Manassa, Colorado, which has produced and continues to produce high quality gem turquoise.

Locatable mineral exploration within the planning area is generally in close proximity to the mining districts and mineralized areas previously identified. Continued interest in the potential for resource development of these areas

Table 2-7
MINING DISTRICTS AND MINERALIZED AREAS

| Mining District (MD) and/or Mineralized Area (MA) | Approximate Location | Potential Commodities Present |
|---|---|---|
| Crestone MD | Ts.43,44N., R.12E. | Au, Ag, Pb., Cu |
| Liberty MD | T.25S., R.73W. | Au, Ag |
| Blanca MD | Ts.27,28W., Rs.72,73W. | Au, Ag, Tungsten |
| Raspberry Creek MA | T.47N., R.9E. | Pb, Ag |
| Steel Canyon MA | T.46N., R.10E. | Ag, Pb |
| Orient Mine | T.46N., R.10E. | Iron ore |
| Wild Cherry Creek MA | T.45N., R.11E. | Ag, Pb, Cu |
| Triple T Mine MA | T.45N., R.11E. | Au, Ag, Cu |
| Bonanza MD | Ts.45,46N., Rs.6,7E. | Ag, Pb, Zn, Cu |
| Crystal Hill MD | Ts.42,43,44N., R.6E. | Au, Ag |
| Jasper MD | T.37N., R.5E. | Au, Ag, Pb, Cu, Alunite |
| Summitville MD | T.37N., Rs.3,4E. | Au, Ag, Cu |
| Platoro MD | T.36N., R.4E. | Au, Ag, Cu, Pb |
| Copper Butte MD | T.45N., R.8E. | Cu |
| Jack's Creek MD | Ts.36,37N., R.6E. | Ag, Pb, Zn |
| Cat Creek MA | Ts.36,37N., R.6E. | Pb, Zn |
| Tracy Canyon MA | T.44N., R.6E. | Ag, Au, Cu, Pb, Zn, Mo |
| King Turquoise Mine MA | T.34N., R.11E. | Turquoise |




FOR A BETTER PERSPECTIVE OF BLM OWNERSHIP SEE THE FOLDOUT MAP AT THE BACK OF THE PLAN.

## Map 2-4
## Locatable Minerals

is indicated. Exploration and development operations filed in compliance with the Surface Management of Public Lands under U.S. Mining Laws (43 CFR 3809) have on an average numbered six notices of intent and one plan of operations per year since 1981. These figures are expected to increase with continued improvement in commodity prices. Currently 6,950 acres of BLM lands in the planning area are closed to location under the mining laws.

### Mineral Materials

Salable mineral materials including, but not limited to, dimension stone, moss rock, sand, gravel, riprap, and cinders are known to occur within the planning area (Map 2-5). Dimension stone, riprap, and moss rock are present primarily in the volcanic rock of the western portion of the SLRA. Sand and gravel are readily available from valley-fill material and Quaternary alluvium. The large basaltic plateaus situated in the south-central and southwestern portion of the planning area are potential sources of volcanic cinders. Of particular interest are the Los Mogotes and the San Luis Hills. With the exception of cinders, there are adequate reserves of mineral materials within the planning area available for utilization. Mineral material authorized for use in the SLRA in 1987 was 510,000 yards with a value of $184,000.

### Mineral Values in Wild and Scenic River Corridor

Fluid and locatable minerals and mineral materials are all present within the 1,760-acre segment of the Rio Grande River Corridor recommended for wild and scenic designation. These mineral values are considered to be nominal.

## PALEONTOLOGICAL RESOURCES

This branch of geology deals with prehistoric life through the study of fossils. It has been pursued only sporadically in the San Luis Valley; however, most geologic formations here have produced fossils either within the vicinity or elsewhere in the region. The only overview/inventory of paleontological resources was contracted by the Bureau of Land Management (BLM) with the Denver Museum of Natural History (Lindsey, 1983). This report emphasized both existing localities and the likelihood of additional fossil material being discovered in given locations. These resources were organized within a classification system based on rarity of occurrence, depth of species/group study, and scientific significance.

Class 1-a—Areas with fossils of scientific interest that are either exposed to the surface or are very likely to be discovered during detailed fieldwork in the area.

Class 1-b—Other areas with a high potential for scientifically significant fossils.

Class 2—Areas with evidence of fossilization, but the presence of fossils of scientific value has not been established, and discovery is not anticipated. Some areas in this class may have recreational and commercial value.

Class 3—Areas with little likelihood for the presence of fossils of scientific use or importance.

No paleontologic properties have been formally evaluated for status within the National Landmark System.

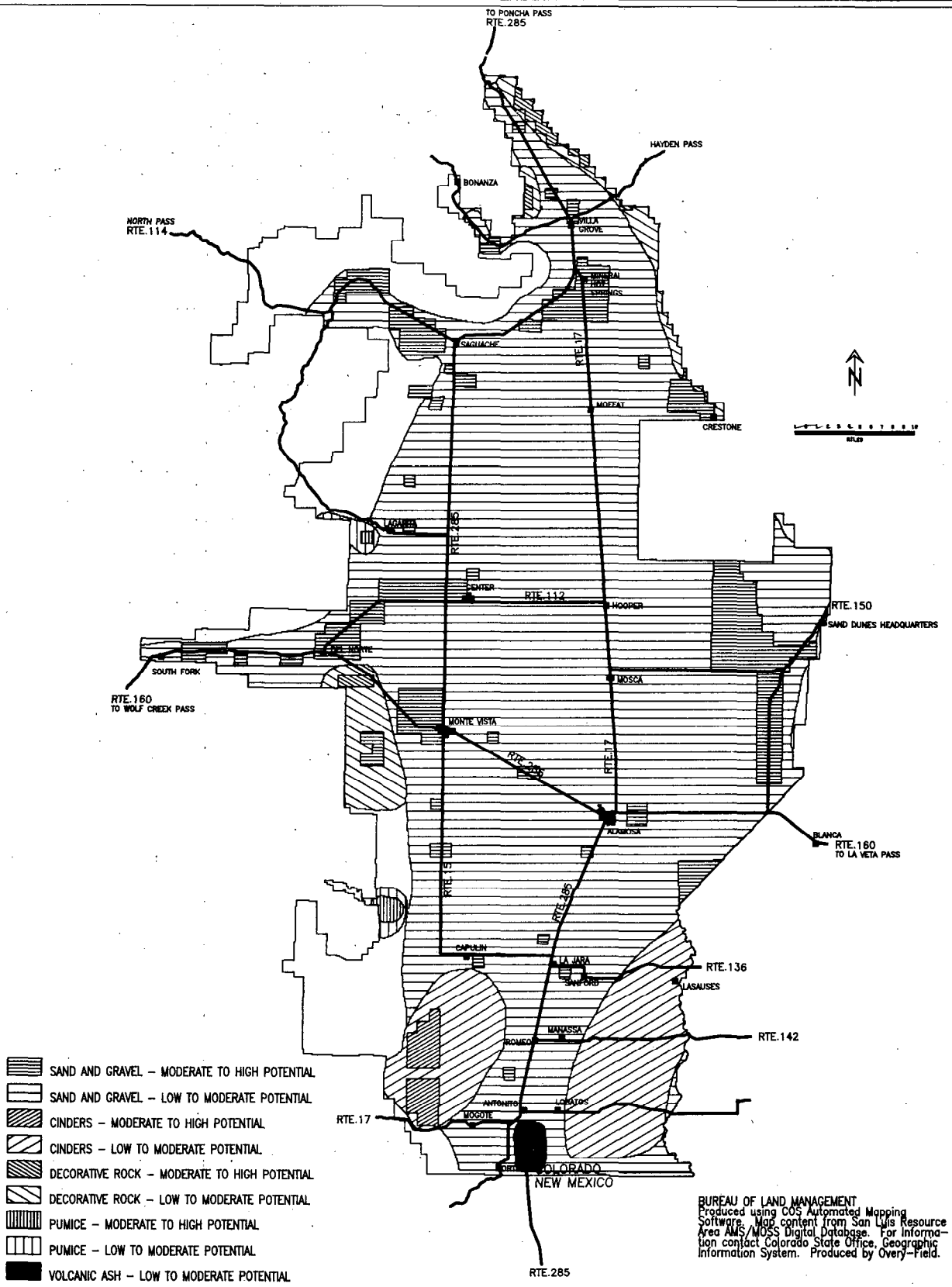
Although paleontologic resources can be scientific, recreational, and commercial commodities, they are limited in the sense that available resources are finite. Scientific study of Pleistocene fauna in association with archaeological materials constitutes the major thrust of paleontology in the resource area at the present time.

## VEGETATION

There are 13 broad vegetation types within the planning unit. The grassland, pinon-juniper, and half-shrub types comprise 80 percent of the area. Table 2-8 lists the acres and percentage of BLM lands in each of the vegetation types. The general trend (direction of change in range condition over a period of time) by allotment is shown in Appendix D.

### Grasslands

The grassland type generally exists on open areas relatively free of trees and shrubs. These areas are dominated by grass species including blue grama *Bouteloua gracilis*, wheatgrass *Agropyron spp*, bottlebrush squirreltail *Sitanion hystrix*, ring muhly *Muhlenbergia torreyi*, and red three-awn *Aristida longiseta*. At the higher elevations Arizona fescue *Festuca arizonica* and mountain muhly *Muhlenbergia montana* occur.




## Map 2-5
## Salable Minerals

FOR A BETTER PERSPECTIVE OF BLM OWNERSHIP, SEE THE FOLDOUT MAP AT THE BACK OF THE PLAN.

Table 2-8
VEGETATION TYPES ON BLM LANDS
IN THE PLANNING AREA

| Vegetation Type | Acres | | Percent BLM Land | |
|---|---|---|---|---|
| Grassland | 124,030 | | 24.0 | |
| Meadow | 1,150 | | 0.2 | |
| Sagebrush | 15,740 | | 3.1 | |
| Mountain-Shrub | 3,471 | | 0.7 | |
| Conifer | 24,710 | | 5.0 | |
| Pinon-Juniper | 48,989 | | 9.0 | |
| Broadleaf | 2,334 | | 0.3 | |
| Saltbush | 2,054 | | 0.4 | |
| Greasewood | 15,867 | | 3.1 | |
| Winterfat | 3,421 | | 0.7 | |
| Half-Shrub | 191,750 | | 37.1 | |
| Annuals | 7,411 | | 1.4 | |
| Rock Outcrop | 2,629 | | 0.5 | |
| TOTAL | 478,420 | (42,257)[1] | 85.5 | (14.5) |

[1] These 42,257 acres are not inventoried at present; therefore, cannot be included in any of the vegetation types.

## Meadow

The meadow type mainly exists along intermittent and perennial streams and around ponds and springs; it is also included in the riparian zones. More detail is in the riparian section.

## Sagebrush

The sagebrush type occurs only at the extreme south end of the area southwest of Antonito, at the extreme north end of the area above Villa Grove, and in the San Luis Hills area. Big sagebrush *Artemisia tridentata* is the only species present. Associated understory species include bluegrass *Poa spp*, Indian ricegrass *Oryzopsis hymenoides*, and needle-and-thread *Stipa comata*.

## Mountain-Shrub

The mountain-shrub type occurs on the lower mountain slopes mostly in the northeastern portion of the area. The predominant species include Gambel oak *Quercus gambelii*, skunkbush sumac *Rhus trilobata*, and small amounts of currant *Ribes spp*. There are small areas of mountain mahogany *Cercocarpus montanus* scattered throughout the entire area.

## Conifer

The conifer type is present at higher elevations that receive 20 inches or more of precipitation annually. Douglas-fir *Pseudotsuga menziesii* and ponderosa pine *Pinus ponderosa* are the major species. The conifer type occurring in open stands supports an understory of Arizona fescue and mountain muhly along with various shrubs and forbs. See the section on forestry for more detailed description of the commercial forest lands.

## Pinon-Juniper

The pinon-juniper type occurs in the foothill areas below the conifer types. The major overstory species are pinon pine *Pinus edulis*, and Utah juniper *Juniperus osteosperma*. Understory species include blue grama, Indian ricegrass, squirreltail, and Scribner needlegrass *Stipa scribneri*. See section on forestry for more detailed description of the commercial woodlands.

## Broadleaf

The broadleaf type is dominated by aspen *Populus tremuloides* and is generally close to surface/subsurface water. Small areas of narrow-leaf cottonwood *Populus angustifolia* occur along some perennial streams.

## Saltbush

The saltbush type commonly occurs in scattered patches within the winterfat and half-shrub types at the lower elevation. Fourwing saltbush *Atriplex canescens* is the species present in the area.

## Greasewood

The greasewood type occurs on areas with poor drainage and high concentrations of salt. Small amounts of saltbush

and rabbitbrush *Chrysothamnus spp* are sometimes intermingled with the black greasewood *Sarcobatus vermiculatus*. Understory vegetation is sparse, but when present is mostly saltgrass *Distichlis stricta*.

### Winterfat

Winterfat *Eurotia lanata* occurs typically at the lower elevations on high pH (8 to 10) soils. Understory grasses include blue grama, western wheatgrass, and Indian ricegrass.

### Half-Shrub

The half-shrub vegetation type is present over the entire area and at all elevations. The dominant species are rabbitbrush and snakeweed *Gutierrezia sarothrae*. The predominant grass species associated with this type are blue grama and ring muhly.

### Annual

The annual types are scattered throughout the area in small patches. Predominant species in this type are Russian thistle *Salsola kali* and stickseed *Lappula spp*.

### Rock Outcrop

The rock outcrop type includes extremely rocky, steep land unsuitable for livestock grazing; however, a variety of vegetative cover is present.

## RIPARIAN RESOURCES MANAGEMENT

A riparian area is defined as land directly influenced by permanent water (BLM Draft Manual 1737, Riparian Area Management), which has visible vegetation or physical characteristics that reflect this permanent water influence. This includes land adjacent to perennial and intermittent streams, ponds, reservoirs, and springs. These areas typically support the most diverse plant communities, both in species composition and in structure, and are the most productive (in lbs/acre) of any vegetation type. Riparian habitats support a variety of resource activities including grazing, wildlife and fisheries management, and recreation.

The majority of riparian areas is associated with perennial streams within the entire planning area and ponds and wetlands within the Blanca Wildlife Habitat Area (1,026 acres). The remainder of the riparian areas is associated with ponds, reservoirs, springs, and intermittent streams throughout the entire planning area. Table 2-9 provides a summary of acres of riparian vegetation by source type. Map 2-6 shows locations of riparian areas in the planning area.

Table 2-9
RIPARIAN ACREAGE BY SOURCE TYPE

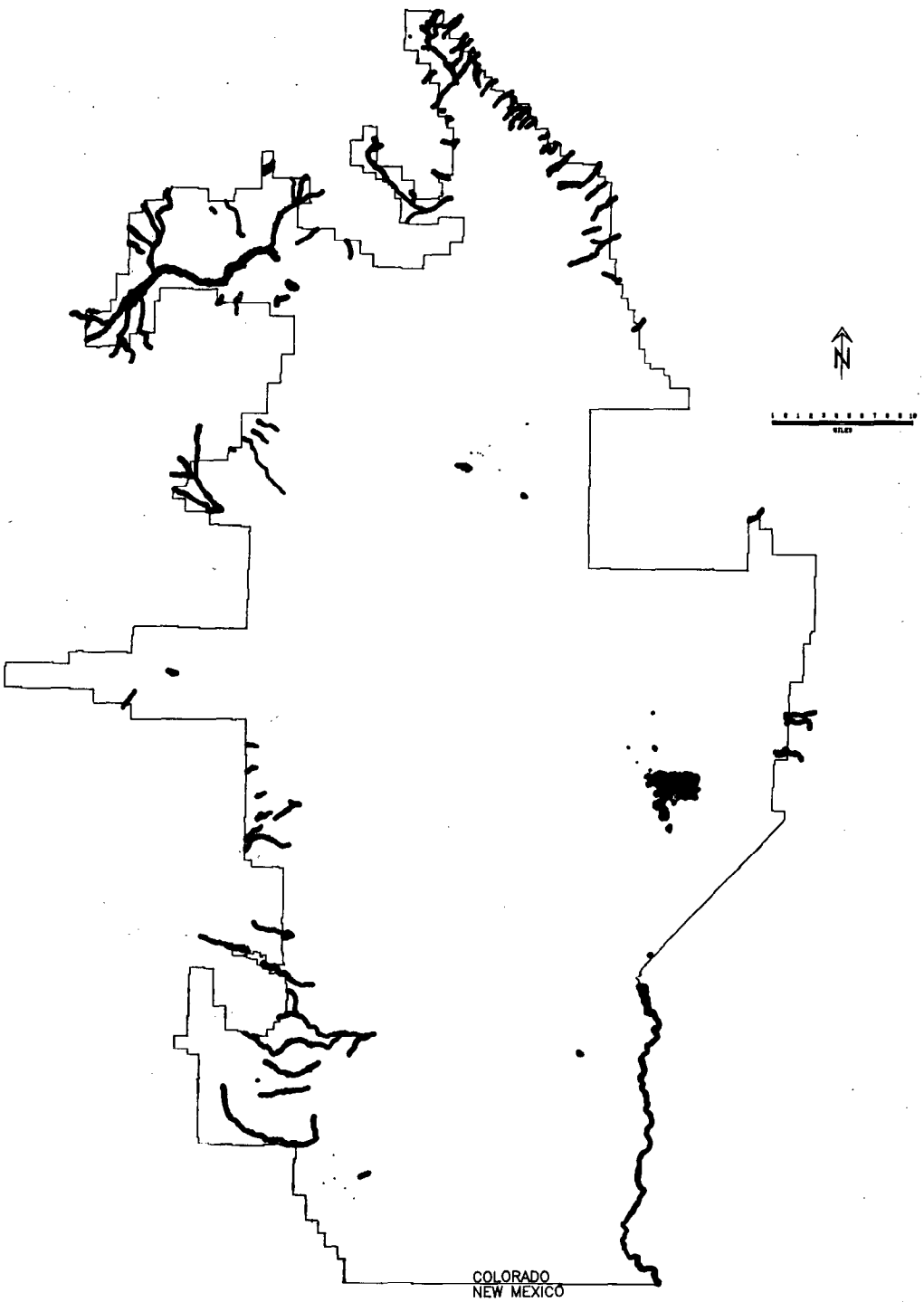
| Source Type | Acres Riparian Vegetation |
|---|---|
| Perennial streams | 1,229 |
| Blanca Wildlife Habitat Area (pond and wetlands) | 1,026 |
| Intermittent Streams | 748 |
| Reservoirs | 21 |
| Ponds | 88 |
| Springs | 119 |
| TOTAL | 3,231 |

Of the 35.3 miles of inventoried perennial streams, 5.1 miles are in excellent condition, 15 miles are in good condition, 4.3 miles are in fair condition, and 10.9 miles are in poor condition. Ninety percent of these stream miles are either stable or improving and 10 percent are declining. Table 2-10 shows the riparian condition and trend of these streams.

The following classifications system used for riparian communities in the San Luis Valley was taken from the 1978 San Luis Grazing EIS:

**Excellent**: Diversity and abundance of typical riparian plants (trees, shrubs, forbs, grasses, etc.) and animals (mammals, birds, amphibians, invertebrates, etc.) good. Good age distribution, reproduction evident. Soil mostly covered with vegetation, bank erosion generally lacking. Cover for animals abundant. Vegetation shades water most of the day.

**Good**: Most groups of typically riparian plants (trees, shrubs, forbs, grasses, etc.) and animals (mammals, birds, amphibians, invertebrates, etc.) present at or near stream border, but numbers may be reduced. Age diversity fair, reproduction evident. Some bare soil areas noticeable, but erosion at low levels. Riparian animals somewhat reduced or typical species missing because of cover loss.




BUREAU OF LAND MANAGEMENT
Produced using COS Automated Mapping Software. Map content from San Luis Resource Area AMS/MOSS Digital Database. For information contact Colorado State Office, Geographic Information System. Produced by Overy-Field.

RIPARIAN AREAS WITHIN THE PLANNING BOUNDARY

FOR A BETTER PERSPECTIVE OF BLM OWNERSHIP, SEE THE FOLDOUT MAP AT THE BACK OF THE PLAN.

**Map 2-6**
**Riparian Areas**

## Table 2-10
## RIPARIAN CONDITION AND TREND ON SELECTED PERENNIAL STREAMS IN THE SAN LUIS VALLEY

| Stream Name | Stream Miles | Riparian Condition | Riparian Stability |
|---|---|---|---|
| Lower Ford Creek | 1.5 | Poor | Declining |
| Middle Ford Creek | 0.5 | Good | Stable |
| Upper Ford Creek | 1.0 | Good | Improving |
| Baxter Creek | 1.5 | Poor | Declining |
| Lower Tuttle Creek | 1.0 | Excellent | Stable |
| Upper Tuttle Creek | 1.0 | Fair | Improving |
| Lower Sheep Creek | 0.3 | Good | Improving |
| Upper Sheep Creek | 1.7 | Excellent | Stable |
| Cross Creek | 0.5 | Good | Stable |
| Kerber Creek | 0.5 | Poor | Declining |
| Alder Creek | 0.4 | Good | Stable |
| Fisher Creek (head of San Luis Creek) | 0.5 | Fair | Stable |
| Rito Alto Creek | 0.3 | Good | Stable |
| Black Canyon Creek | 0.8 | Excellent | Stable |
| Quarry Creek | 0.3 | Excellent | Stable |
| Upper Raspberry Creek | 0.5 | Excellent | Stable |
| Lower Raspberry Creek | 0.5 | Fair | Stable |
| Eaglebrook Gulch | 0.6 | Fair | Stable |
| Saguache Creek | 0.3 | Excellent | Stable |
| Spanish Creek | 0.3 | Excellent | Stable |
| Rock Creek | 0.2 | Excellent | Stable |
| Middle San Luis Creek | 0.4 | Poor | Stable |
| Upper San Luis Creek | 0.6 | Good | Stable |
| Dorsey Creek | 0.5 | Good | Improving |
| Upper Garner Creek | 0.3 | Good | Stable |
| Middle Garner Creek | 0.3 | Good | Stable |
| Lower Garner Creek | 1.7 | Fair | Improving |
| Cotton Creek | 0.8 | Good | Stable |
| Rio Grande (Upper) | 7.0 | Poor | Stable |
| Rio Grande (Lower) | 5.0 | Good | Stable |
| La Jara Creek | 2.5 | Good | Improving |
| Alamosa River | 2.0 | Good | Stable |
| Total | 35.3 | | |

**Fair**: Many of the typically riparian plants (trees, shrubs, forbs, grasses, etc.) and animals (mammals, birds, amphibians, invertebrates, etc.) rare or missing from stream border. Age diversity lacking, little sign of reproduction. Bare soil may be common. Animal populations greatly reduced from lack of cover. Vegetative shade on stream lacking or only during morning and evening hours.

**Poor**: Typically riparian plants and animals scanty or lacking in both numbers and diversity. Little age variation, no sign of reproduction. Range plants (e.g., rabbitbrush, sagebrush, etc.) abundant down to water edge. Erosion of bare soil normally high, but may be reduced in grass communities that provide good ground cover but little diversity or animal cover. No shade on water from vegetation.

Riparian areas have recently received much recognition in Bureau of Land Management programs. Historically, these unique vegetation communities have not been managed directly; however, impacts have occurred as a consequence of other resource use practices. Since 1979, there has been an abundance of research focusing on the management and rehabilitation of riparian areas.

Mineral development may cause adverse impacts if the development alters stream channels or occurs adjacent to riparian areas. The Draco Mine near La Garita and the old Orient Mine near Villa Grove appear to have caused some changes in nearby intermittent streams.

Livestock grazing is one resource use that may adversely affect riparian areas. Since food, water, and cover are readily available near streams, these areas receive the heaviest livestock use. Sheep are herded and their movements can be controlled, so they generally do not have an adverse impact on riparian areas. Uncontrolled, season-long use during the spring and summer usually results in denudation of the streambanks. During high flow periods, these denuded banks offer less resistance to the flow of the water and do not allow for the natural functioning of floodplains, which includes silt filtering, bank building, aquifer recharge, water storage, and flood energy dissipation. This often results in downcutting of the stream channel, lowering of the water table, and in turn loss of the water-dependent riparian vegetation as well as loss of associated values.

Uncontrolled fall use by livestock may also be detrimental to riparian areas. Since the forage value and palatability of grasses steadily decline after seedripe, livestock seek woody species such as cottonwood, aspen, alder, and willow, which have a high forage value in the fall. The seedlings are either eaten or trampled and are unable to grow to a sufficient height that is out of reach of livestock. This results in the loss of regeneration. The parent stand of mature trees gradually becomes decadent and dies, leaving the streambank void of any woody species.

There are currently 59 allotment management plans (AMPs) with grazing strategies that control the season and duration of use and the number and type of livestock on riparian areas. Ninety-three percent of the inventoried streams in good to excellent condition occur within grazing allotments. Of the 15.2 miles of inventoried streams in poor to fair condition, 20 percent would improve with implementation of the Poison Gulch AMP, and 46 percent would improve when the trespass situation on the Rio Grande River is resolved. Improvement on the remaining streams can be expected as riparian objectives are incorporated into the

AMPs. Most of the developed springs have been fenced to exclude livestock, and eight exclosures have been constructed on four perennial streams. Development and implementation of the Poison Gulch AMP, which contains the Ford Creek riparian demonstration area and Baxter Creek (perennial streams) and Poison Gulch (intermittent stream), would incorporate the riparian pasture concept into the grazing strategy.

Under current policy, no timber harvesting is allowed in riparian areas. Additionally, harvesting is not allowed on slopes greater than 35 percent. These measures provide adequate protection of riparian vegetation on BLM lands in the San Luis Valley.

Management of riparian areas adjacent to perennial streams is complicated by the large acreages of private (and state) lands interspersed with BLM lands along those areas. There are no perennial streams in the valley owned solely by BLM and less than 10 percent of the total stream lengths occur on BLM lands. Ownership on Saguache Creek, Kerber Creek, Rito Alto Creek, etc. is so limited that any management actions would necessitate agreements with many landowners. The majority of streams, of which BLM manages more than 25 percent, are on the western slope of the Sangre de Cristo range north of Crestone. Sheep Creek, Ford Creek, East Pass Creek, and Tuttle Creek, are located on BLM lands.

Road construction also adversely affects riparian areas. Improper placement of bridges and culverts may restrict water movement and increase water flow velocity through these structures; channel erosion may result. Improper location of roads cam result in various immediate and future impacts on riparian zones. The immediate impact is that highly diverse and productive vegetation is replaced with bare, impervious soils. Ongoing impacts, such as increased sedimentation, erosion, and increased impacts from flooding, occur where roads are improperly located and/or where alteration or encroachment occurs on stream channels.

# LIVESTOCK GRAZING MANAGEMENT

Domestic livestock graze 473,457 acres or approximately 92 percent of the BLM lands within the planning area. The area is divided into 148 grazing allotments with 109 individual livestock users and over 99 percent of the operations are family operated ranches. Approximately 30 percent of the ranchers in the valley depend on the use of BLM lands in their operations. Although the dependency varies greatly between operations, the use is critical to all operators in their year-round use. A total of 32,560 animal unit months (AUMs) of forage is available for livestock grazing (Map 2-7).

Grazing on BLM lands occurs during various periods from early May to the end of February. To avoid competition for forage on crucial winter habitat, no domestic livestock grazing is allowed from March 1 to the early part of May. Except for 1 week of use in March on one allotment, grazing is also not authorized during spring thawing, which begins in March and continues until early May. During this time of severe wet soil and road conditions, active plant growth begins.

Sheep, cattle, and some horses are authorized to graze on BLM lands. Nearly all of the sheep grazing occurs on the southern half of the planning area in the fall and winter season (mid-September through the end of February). Some spring use (May through mid-June) also occurs. Cattle grazing on BLM lands occurs throughout the planning area; mainly in the summer and fall (mid-June to mid-September). Some cattle use, however, occurs in the spring.

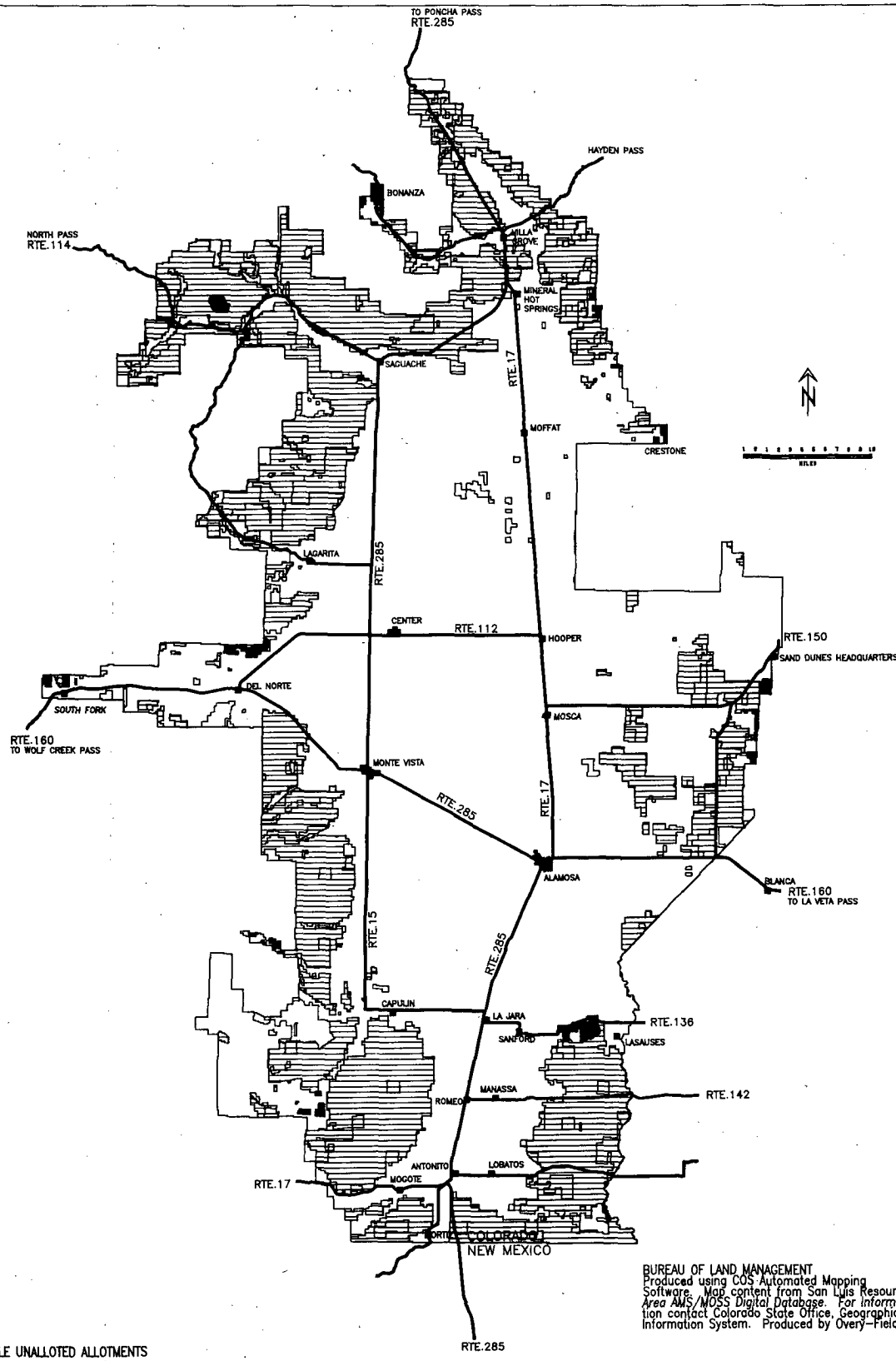
A grazing environmental impact statement (EIS) for the resource area was completed in 1978; implementation began in 1978. There are 59 operational or implemented allotment management plans (AMPs) with 36 still scheduled for implementation. There are three allotments for which a grazing system is stipulated as part of the grazing permit. Of the 148 allotments, 95 are classified as "I" management category allotments, 3 as "M" management category allotments, and 50 as "C" management category allotments.

Appendix D provides allotment specific data on the livestock grazing program in the planning area.

# WILDLIFE AND FISH HABITAT MANAGEMENT

The Bureau of Land Management has responsibility to manage wildlife habitat (land, vegetation, etc.) and the Colorado Division of Wildlife (CDOW) has responsibility to manage the wildlife species. BLM lands in the San Luis Planning Area provide eight important habitat types for terrestrial wild animals.

Ten broad vegetation types combine to form six important habitat types, covering over 97 percent of the surface acreage of the resource area. These habitat types include the saltbush and greasewood type, half-shrub and winterfat type, grassland type, pinon-juniper woodland type, mountain shrub and sagebrush type, and coniferous and broadleaf forest




## Map 2-7

FOR A BETTER PERSPECTIVE OF BLM OWNERSHIP, SEE THE FOLDOUT MAP AT THE BACK OF THE PLAN.

## Unsuitable Unallotted Allotments and Allotment Boundaries

type. Two types—wetlands (marsh, riparian, and wet meadows) and rocky cliffs and canyons—are extremely limited (1 percent) in surface acreage, but each has special significance as habitat. The remaining vegetation type—annuals—has little importance as wildlife habitat. Refer to the vegetation section for details on the composition, distribution, and acreages of each type in the resource area. Table 2-11 identifies the more common terrestrial wildlife species and location according to vegetation types

## Table 2-11
## COMMON TERRESTRIAL WILDLIFE IN THE PLANNING AREA

| Common Name | Habitat/Vegetation Type |
|---|---|
| Mule deer | All |
| Elk | All |
| Pronghorn antelope | Grasslands, shrublands, riparian |
| Coyote | All |
| Cottontail rabbit | All |
| White-tailed jackrabbit | All |
| Red squirrel | Coniferous-broadleaf |
| Ground squirrel | All |
| Porcupine | All |
| Prairie dog | Grasslands, shrublands |
| Muskrat | Riparian |
| Gopher snake | All |
| Common garter snake | Riparian |
| Mallard duck | Riparian |
| Gadwall duck | Riparian |
| Avocet | Riparian |
| Mourning dove | All |
| Rough-legged hawk | All |
| Kestrel | All |
| Flicker | Coniferous-broadleaf, pinon-juniper, riparian |

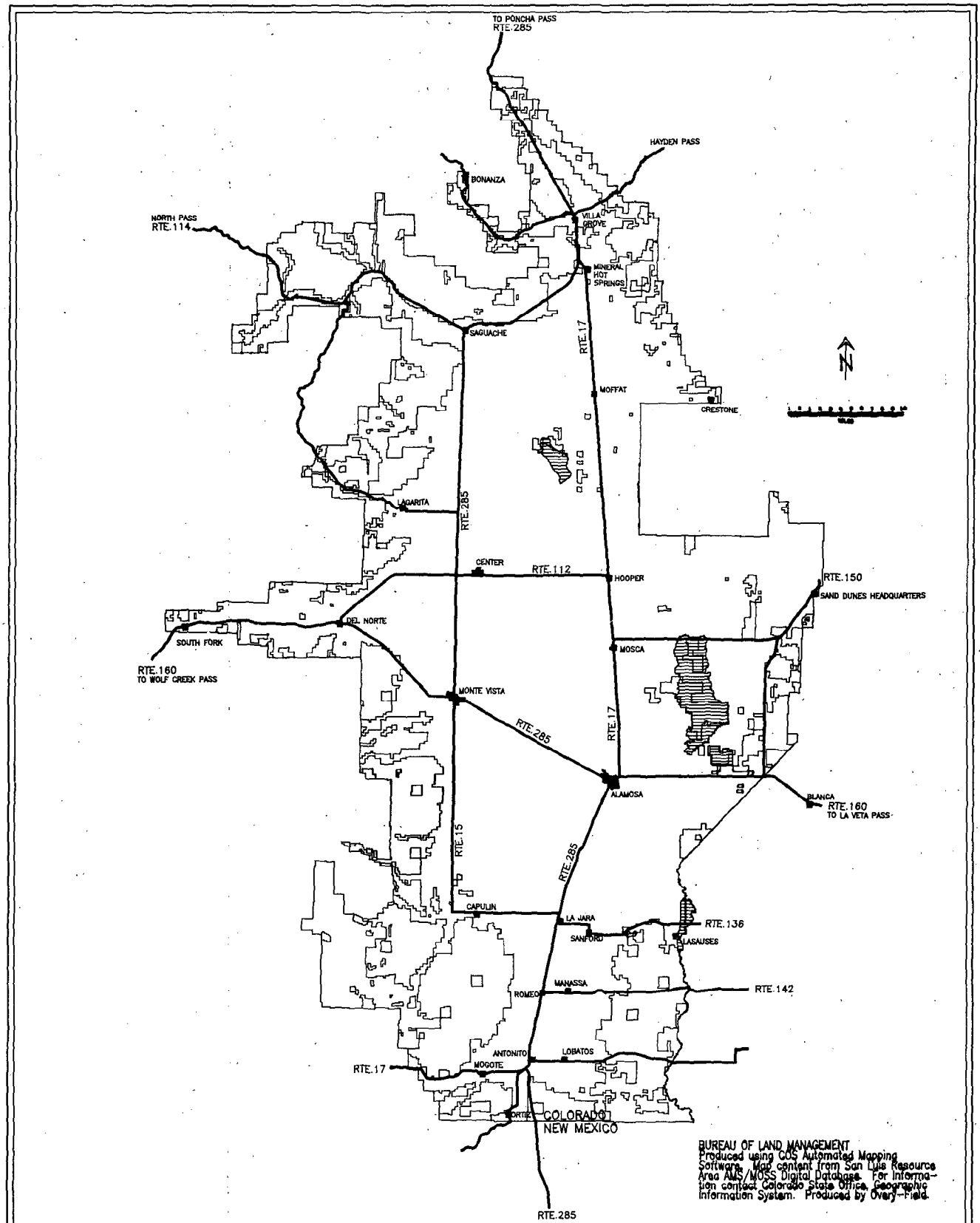
The San Luis Valley has been described as the southernmost major waterfowl production area in the central flyway. It is also considered the most important waterfowl production area in Colorado.

Important nesting species include the Canada goose, mallard, gadwall, pintail, green-winged teal, cinnamon teal, and redhead. The role of the Bureau in wetland habitat is significant in the planning area and the most important production area is the Blanca Wildlife Habitat Area. This 5,750-acre area is a restoration project in a historical wetlands area estimated at 15,000 to 20,000 continuous acres prior to its demise in the early 1900s. The area is 90 percent complete in construction, but only 65 percent of the necessary water currently has been developed. If completed, the potential will be reached in 10 to 15 years. Cooperative funding from CDOW has played a role in the development of this project and is identified in the CDOW Draft Water Bird Plan as one of the seven core areas necessary for maintaining water bird production in the San Luis Valley. This area is also designated as a mitigation site for impacts attributed to the construction of the Bureau of Reclamation Closed Basin Project. Seven BLM wetland areas totaling 2,257 acres are displayed in Table 2-12. Included in this table are 1,825 acres of historical wetlands presently out of production. Appendix C, Table C-1 displays BLM land wetland habitat condition and trend.

## Table 2-12
## BLM WETLANDS

| Area | Existing Wetland Acres | Potential Historical Wetland Acres | Remarks |
|---|---|---|---|
| Blanca Wildlife Habitat Area | 1,400 | 475 | 475 to be developed under the existing HMP |
| Emperius | 200 | 750 | 4,200 acre-feet of adjudicated water from 52 artesian wells, presently 500-acre-feet flowing |
| Flat Top | 24 | 20 | Irrigation sump |
| Rio Grande River | 76 | | Only one side of river is public land |
| Mishak Lakes | 16 | 50 | 4 artesian wells |
| Dry Lakes | 39 | 530 | Possible to obtain water from CDOW or BR Closed Basin |
| Perennial streams and stock reservoirs | 502 | ? | Small wet meadows associated with riparian woodlands, spring seeps, and reservoirs |
| Total | 2,257 | 1,825 | |

The total available waterfowl nesting habitat (Map 2-8) has decreased dramatically since 1900 because of extensive agricultural development and a continuing decrease in the water table level. Some of the habitat losses have been buffered with the development of specified management areas including the Alamosa and Monte Vista Wildlife Refuge Complex, several CDOW management areas, and the Blanca Wildlife Habitat Area. The population trend, however, appears to follow a downward trend.




FOR A BETTER PERSPECTIVE OF BLM OWNERSHIP, SEE THE FOLDOUT MAP AT THE BACK OF THE PLAN.

## Map 2-8
## Waterfowl Habitat

There are approximately 28,500 big game animals in the valley of which 17,600 winter on BLM administered lands. Crucial area overlaps are extensive between species and up to four species may be dependent on the same area of range. The acreage of crucial ranges common to one or more species totals 526,180 acres of which 333,480 are BLM lands (Map 2-9). An estimated 48,600 AUMs yearly are consumed by big game on these lands; 38,000 are consumed in the winter. Table 2-13 through Table 2-18 display big game numbers and habitat within the planning area. Tables in Appendix C shows condition and trend of these habitats. Maps showing habitat for individual big game species are in Appendix C of this document. The dependency of the total populations of planning area herds on BLM land winter range is 75 percent for antelope (Map C-1), 84 percent for bighorn sheep (Map C-2), 67 percent for mule deer (Map C-3), and 51 percent for elk (Map C-4). Almost 80 percent of the antelope, 37 percent of the bighorn sheep, 15 percent of the mule deer, and 5 percent of the elk utilize BLM lands for year-round habitat.

## Table 2-13
## PLANNING AREA WINTER DEER HABITAT POPULATIONS

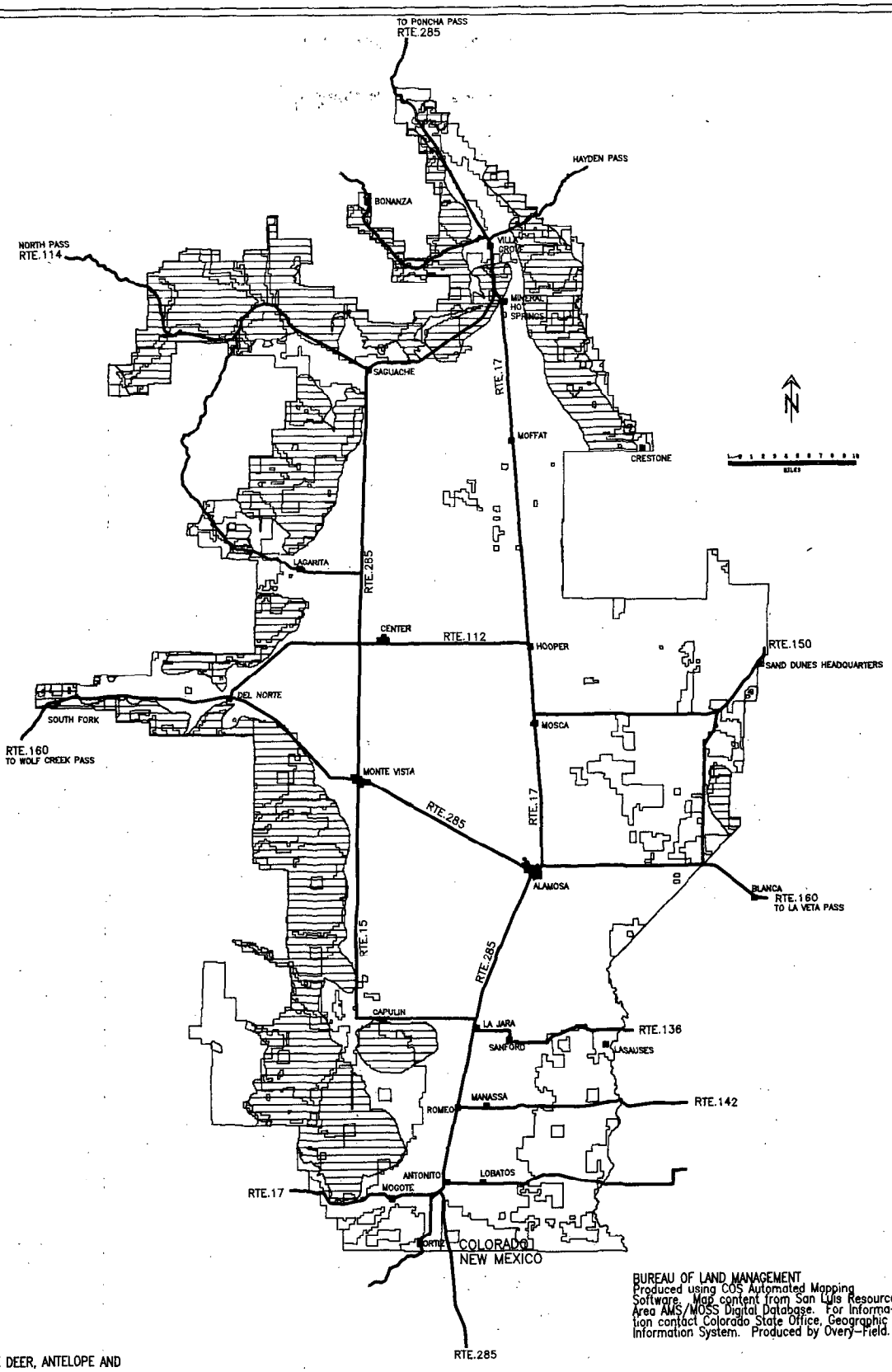
| DOW Unit Number | Deer Numbers in Winter Unit [1] | Total Acres Winter Range | Acres BLM Winter Range | Number Crucial Areas/ Acres Crucial Areas | Acres BLM Crucial | Number Deer Winter BLM | Remarks |
|---|---|---|---|---|---|---|---|
| 68 | 2,200 | 121,077 | 76,703 | 2/ 11,706 | 6,716 | 1,525 | 15 percent deer |
| 681 | 2,600 | 133,948 | 82,248 | 2/ 50,942 | 42,778 | 1,800 | population on |
| 79 | 2,000 | 46,325 | 15,387 | 1/ 2,995 | 1,192 | 750 | public land |
| 80 | 2,000 | 149,515 | 11,376 | 1/ 75,660 | 48,478 | 1,450 | year round |
| 81 | 2,400 | 307,573 | 125,553 | 4/ 52,200 | 33,882 | 1,750 | |
| 82 | 2,700 | 140,092 | 26,606 | 2/ 42,741 | 16,458 | 2,025 | |
| TOTAL | 13,900 | 898,530 | 337,873 | 12/236,244 | 149,504 | 9,300 | |

[1] 1985 Post Hunt Data and CDOW.

## Table 2-14
## PLANNING AREA WINTER ELK HABITAT POPULATIONS

| DOW Unit Number | Elk Numbers in Winter Unit [1] | Total Acres Winter Range | Acres BLM Winter Range | Number Crucial Areas/ Acres Crucial Areas | Acres BLM Crucial | Number Elk Winter BLM | Remarks |
|---|---|---|---|---|---|---|---|
| 68 | 1,100 | 106,543 | 73,381 | 2/ 57,279 | 43,328 | 700 | 5 percent elk |
| 681 | 1,500 | 127,399 | 100,312 | 2/ 83,048 | 65,067 | 950 | population on |
| 79 | 3,500 | 19,909 | 10,625 | 1/ 2,998 | 1,190 | 1,150 | public land |
| 80 | 2,000 | 86,955 | 55,984 | 1/ 84,112 | 55,436 | 1,100 | year round |
| 81 | 2,400 | 171,662 | 92,911 | 1/ 78,367 | 55,698 | 1,300 | |
| 82 | 500 | 108,053 | 41,109 | 2/ 25,633 | 18,931 | 375 | |
| TOTAL | 11,000 | 620,521 | 374,322 | 12/331,437 | 239,650 | 5,575 | |

[1] 1985 Post Hunt Data and CDOW




## Map 2-9
## Crucial Winter Habitat

FOR A BETTER PERSPECTIVE OF BLM OWNERSHIP, SEE THE FOLDOUT MAP AT THE BACK OF THE PLAN.

## Table 2-15
## PLANNING AREA ANTELOPE HABITAT AND POPULATIONS

| DOW Data/Anal Unit Number | Population in Data Unit | Peak Population Utilizing BLM | Total Winter Range Acres | BLM Winter Range Acres | Number Crucial Areas/Acres | BLM Crucial Areas/Acres | Number Antelope Winter BLM |
|---|---|---|---|---|---|---|---|
| A73 | 340 | 340 | 164,213 | 120,166 | 2(W) 73,270<br>1(F) 189 | 2(W) 55,082<br>1(L) 189 | 235 |
| A74 | 1,050 | 1,050 | 162,583 | 52,938 | 2(W) 84,422<br>2(F) 46,106 | 2(W) 24,715<br>2(F) 26,776 | 880 |
| A76 | 320 | 320 | 45,112 | 11,080 | 1(W) 18,228<br>1(F) 6,986 | 1(W) 7,819<br>1(F) 1,369 | 245 |
| A77 | 350 | 350 | 102,171 | 50,830 | 1(W) 32,739 | 1(W) 17,336 | 255 |
| A78 | 150 | 150 | 29,719 | 9,754 | 0 | 0 | 125 |
| A79 | 610 | 610 | 117,047 | 73,535 | 2(W) 26,045<br>1(F) 16,366 | 2(W) 19,311<br>1(F) 12,567 | 450 |
| A80 | 100 | 100 | 107,758 | 74,090 | 0 | 0 | 85 |
| Other | 100 | 0 | 48,889 | 0 | 1(W) 9,545 | 0 | 0 |
| TOTAL | 3,020 | 2,920 | 777,492 | 392,393 | 9(W) 244,249<br>5(F) 69,647 | 8(W) 124,263<br>4(F) 40,712<br>1(L) 189 | 2,275 |

W = Crucial winter habitat
F = Crucial fawning habitat
L = Crucial lambing habitat

## Table 2-16
## PLANNING AREA SHEEP HABITAT AND POPULATIONS

| DOW Data/Anal Unit Number | Population in Data Unit | Peak Population Utilizing BLM | Total Winter Range Acres | BLM Winter Range Acres | Number Crucial Areas/Acres | BLM Crucial Areas/Acres | Number Sheep Winter BLM |
|---|---|---|---|---|---|---|---|
| S10 | 350 | 350 | 98,496 | 79,940 | 2(W) 52,189<br>6(L) 7,175 | 2(W) 43,198<br>6(L) 6,065 | 350 |
| S55 | 75 | 50 | 3,624 | 1,317 | 1(W) 3,624 | 1(W) 1,317 | 50 |
| S29 | 145 | 80 | 10,534 | 5,308 | 3(W) 10,534 | 3(W) 5,308 | 80 |
| TOTAL | 570 | 480 | 112,654 | 86,565 | 6(W) 66,347<br>6(L) 7,175 | 6(W) 49,823<br>6(L) 6,065 | 480 |

W = Crucial winter habitat
F = Crucial fawning habitat
L = Crucial lambing habitat

Table 2-17
CRUCIAL WINTER RANGE OVERLAP
FOR BIG GAME SPECIES
IN THE PLANNING AREA

| No Species | (Acres) Total Crucial Winter Range | (Acres) Crucial Winter Range on BLM | Percent BLM |
|---|---|---|---|
| 1 | 288,380 | 168,040 | 58 |
| 2 | 178,590 | 119,420 | 67 |
| 3 | 44,890 | 33,085 | 74 |
| 4 | 14,230 | 12,935 | 90 |
| TOTAL | 526,180 | 333,480 | |

Table 2-18
FORAGE CONSUMPTION
BY BIG GAME (AUMs) ON BLM LAND

| Name | Winter | Other Seasons | Total |
|---|---|---|---|
| Elk | 28,000 | 3,675 | 31,675 |
| Deer | 7,680 | 3,336 | 11,016 |
| Antelope | 1,625 | 2,600 | 4,225 |
| Sheep | 766 | 700 | 1,466 |
| TOTAL | 38,071 | 10,311 | 48,382 |

Springs, seeps, reservoirs, streams, and rivers provide the aquatic habitat in the planning area. Although considered a small portion of the total aquatic habitat in the San Luis Valley, BLM lands provide 72 miles of permanent streams and approximately 180 surface acres of ponds capable of fish production.

The amount of fishing on BLM waters is less than 2 percent when compared to the planning area; however, some fair quality trout fisheries do exist. Warm water fisheries are insignificant (less than 1 percent) when compared to cold water fisheries; however, an estimated 90 percent of this type of fishery available in the planning area is confined to BLM lands in the Blanca Wildlife Habitat Area, which makes them a "unique" feature.

Aquatic habitat condition and trend for 37 miles of selected streams and 180 surface acres of pond are described in Appendix C.

# FOREST AND WOODLAND MANAGEMENT

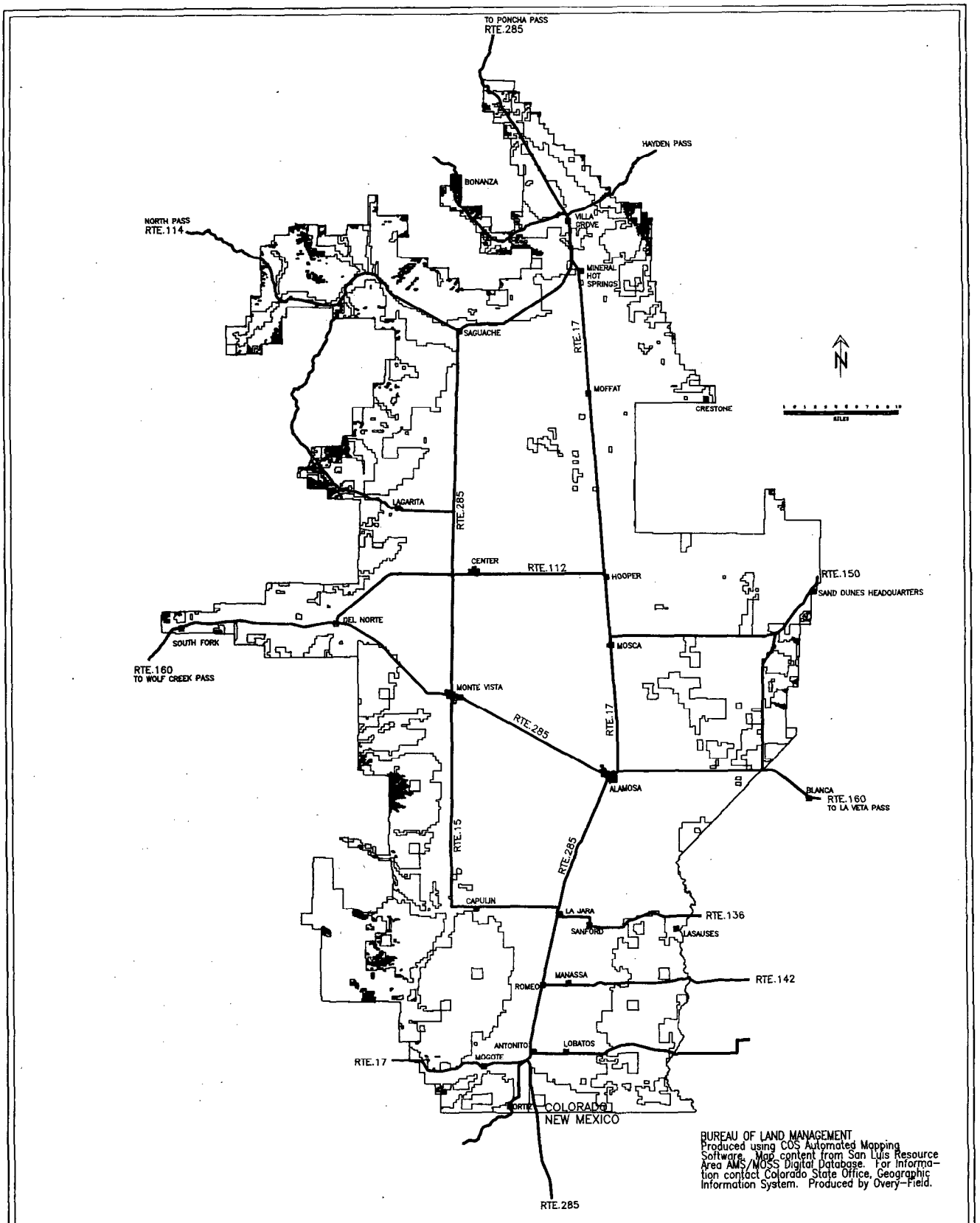
Fifteen percent (76,033 acres) of the BLM surface acres in the SLRA are occupied by forest cover types that can be grouped into commercial forest lands or woodlands. Of this total, approximately 27,044 acres are classified as commercial forest lands and 48,989 acres of pinon-juniper, limber pine, and bristlecone pine are considered woodlands. The acreage of forest types suitable for sustained-yield management were identified by the Timber Production Capability Classification (TPCC) Inventory and are shown in Table 2-19.

Table 2-19
ACRES OF FORESTS AND WOODLANDS
ON BLM LANDS

| | Commercial Forest Land | Woodlands |
|---|---|---|
| Total acres of forested BLM land | 27,044 | 48,989 |
| Acres withdrawn from production because of: | | |
| Fragile Soil | 170 | 0 |
| Fragile Soil/Slope Gradient | 14,708 | 36,507 |
| Reforestation Problems | 6,272 | 0 |
| Total Acres Withdrawn | 21,150 | 36,507 |
| Total operable production base [1] | 5,894 | 12,482 |

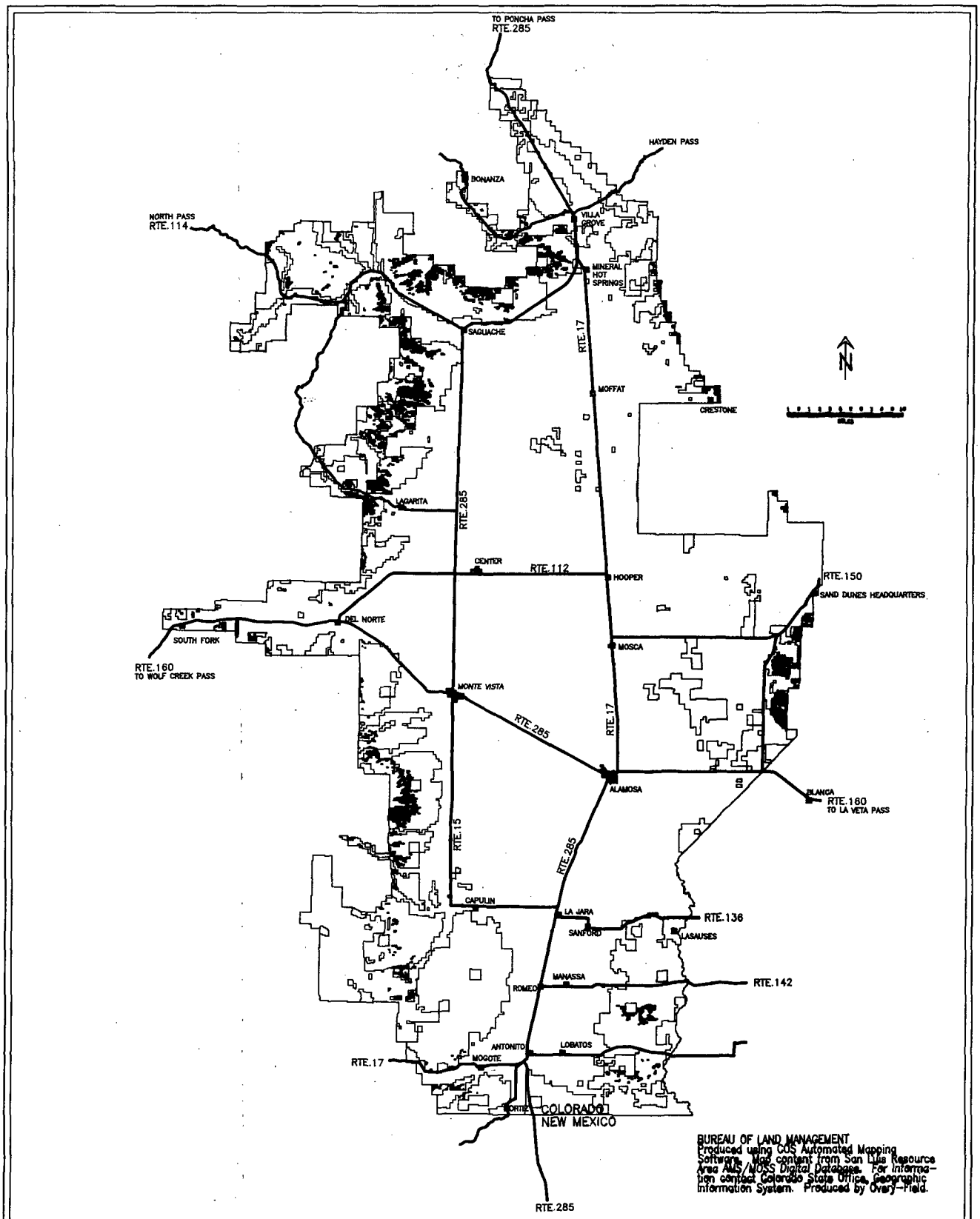
[1] Total acres forested BLM land minus acres withdrawn

Forest lands are classified as commercial if capable of yielding 20 cubic feet per acre of wood products annually under intensive management practices and on a sustained-yield basis. (See Canon City Ten-Year Forest and Woodland Management Activity Plan for information on sustained-yield calculations. A copy of the plan is in the SLRA office and the Canon City District Office.) Lands with 10 percent or less canopy cover are classified in other dominant vegetation types. Locations of the total commercial forest and woodland acres are displayed on Maps 2-10 and 2-11. Operable commercial forest lands and operable woodlands are shown on Maps 2-12 and 2-13.



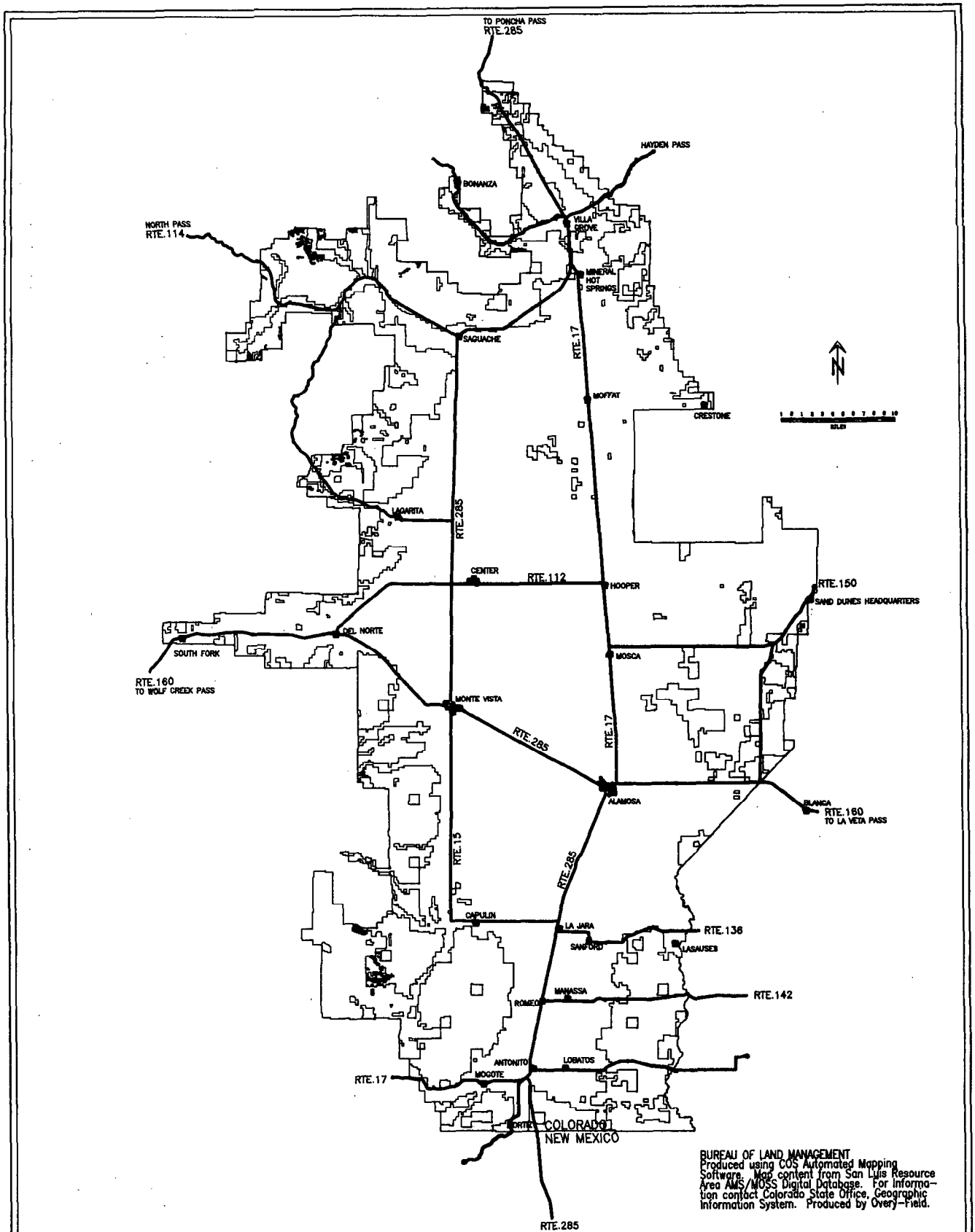

FOR A BETTER PERSPECTIVE OF BLM OWNERSHIP, SEE THE FOLDOUT MAP AT THE BACK OF THE PLAN.

## Map 2-10
## Total Commercial Forest Lands



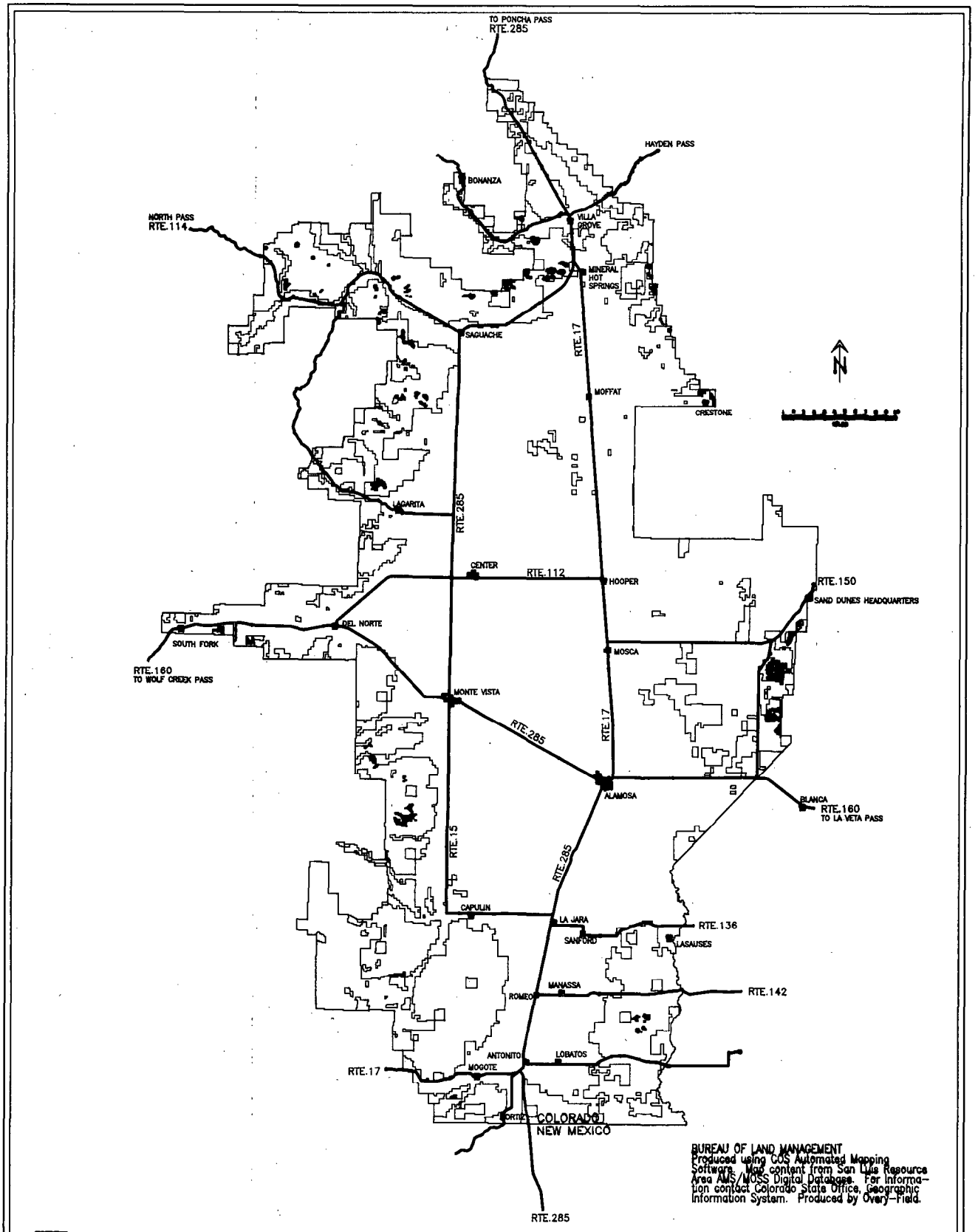

## Map 2-11
## Total Woodlands

FOR A BETTER PERSPECTIVE OF BLM OWNERSHIP, SEE THE FOLDOUT MAP AT THE BACK OF THE PLAN.




## Map 2-12
## Operable Commercial Forest Lands

FOR A BETTER PERSPECTIVE OF BLM OWNERSHIP, SEE THE FOLDOUT MAP AT THE BACK OF THE PLAN.




FOR A BETTER PERSPECTIVE OF BLM OWNERSHIP, SEE THE FOLDOUT MAP AT THE BACK OF THE PLAN.

## Map 2-13
## Operable Woodlands

## Commercial Forest Lands

The present, annual, allowable, commercial timber harvest level of 288 Mbf from 5,769 acres was calculated based on the acreage of operable lands available for intensive forest product management. This management category includes areas where forest management is one of many uses, but where other resource values are not emphasized. These acres are currently operable with existing equipment and technology. Ponderosa pine, Douglas-fir, Englemann spruce, lodgepole pine, white fir, and aspen are those species valued as important by local industry.

The suitable, operable commercial forest lands produce between 20 and 49 cubic feet per acre per year. These forests are commonly an ecotone between the open valley floor and the more continuous forest environment on the adjacent national forest land. Many of the stands are narrow stringers or isolated patches averaging about 50 acres in size. Sparse, patchy groups of trees and small isolated stands less than 10 acres in size were not typed nor included as suitable forest land. The nonsuitable commercial forest lands are those judged incapable of sustained long-term timber production because of their fragile nature or inability to adequately regenerate under existing harvesting or reforestation technology.

The Colorado Forest Products Directory lists nine primary processing firms in the four counties containing BLM forest land. The existing mill capacity for commercial species is 42,400 Mbf annually. In addition, approximately 10 more small logger/sawmill operators have purchased or shown interest in past BLM sales. The recently calculated allowable cut for the Canon City District is 2.1 MMbf. The allowable harvest allocation to the SLRA is 288 Mbf annually and is less than 1 percent of the local demand for sawtimber. The large majority is obtained from the national forests.

Approximately 75 percent of the commercial forest acres have had some type of harvest entry during the past 20 to 25 years. Most of these areas now contain residual, poorly stocked stands of small, suppressed, or intermediate sized trees, and a few low quality sawlog size trees per acre. The regeneration occurring naturally in these stands is highly vulnerable to infection by the dwarf mistletoe present in the overstory. At present, the western spruce budworm is the most damaging insect pest to the Douglas-fir and white fir. The aspen stands are mature and are generally healthy appearing; however, after age 80, aspen clones begin deteriorating in vigor and volume. White trunk rot is responsible for nearly 60 percent of the decay loss in aspen. Several canker and leaf diseases are also common. White pocket rot, rust-red stringy rot, and red-brown butt rot are very common decay loss pathogens in the conifer stands. Because of the extent of cutover acres, the predominantly mature age classes, and the presence of forest pests, the commercial forest lands are in fair to poor condition and in a deteriorating trend. The commercial stands on the steeper and more inaccessible areas will continue to exhibit downward trends because of the exclusion of fire in the ecosystem and the inability to silviculturally treat forest pests.

## Woodlands

The fuelwood harvest from the suitable pinon-juniper woodlands is calculated to be approximately 567 cords annually from 10,688 acres based on a 150-year rotation plus a 25-year natural regeneration period.

Eight to 10 commercial fuelwood operators are located in the SLRA. The supply of fuelwood available from the commercial and woodland forests far exceeds the present demand. Approximately 150 cords have been sold annually on a demand basis to families and small commercial operators. In addition, 750 to 800 transplant trees and Christmas trees are sold each year.

Pinon pine-juniper communities usually have an understory of grasses and shrubs adapted to dry conditions. Precipitation averages 10 to 15 inches annually, and elevations range from 7,500 to 9,500 feet. Small stands typed as limber pine or bristlecone pine will be treated as woodlands. They are generally located on shallow, rocky exposed ridges at or near timberline. Gambel oak (no acreage included as woodlands because they rarely attain heights of more than 20 feet) is normally in the upper portion of and just above the pinon-juniper woodlands. Oak commonly forms large, dense thickets on many sites, which impedes the establishment of conifers. No harvesting of forest products is planned in riparian areas.

Productive, operable woodlands are those stands located on slopes of 35 percent or less with tree canopy density averaging 40 percent or more. Nonoperable woodlands are those stands on slopes greater than 35 percent, or with tree canopy density averaging less than 40 percent. The pinon-juniper woodlands generally exhibit a wide range of diameters and stocking density. Most of the stands, however, are mature or approaching maturity. Mature stand volumes range from 7 to 10 cords per acre for the productive operable acres. Insects and disease are endemic in the pinon-juniper cover type, although a few small scattered pockets of mortality caused by various root rots (primarily shoestring root rot) are present. Generally the woodlands can be described as healthy and in a stable condition.

# LANDS AND REALTY MANAGEMENT

A total of 520,677 acres of land surface and mineral estate, plus 101,926 acres of subsurface mineral estate within the planning area, are administered by BLM. The land surface acreage encompasses portions of Alamosa, Conejos, Saguache, and Rio Grande Counties, and because of changes in the Rio Grande River channel over the years, a small portion (156 acres) of Costilla County is also within the planning area. The western boundary of the Sangre de Cristo Grant is presently undetermined in Tps. 32, 33, and 34N., R.11E. Some BLM lands may lie east of the centerline of the Rio Grande River, and some unsurveyed BLM land may exist between the river and the west rim of the canyon in T.32N. The Great Sand Dunes National Monument, administered by the National Park Service, and the Alamosa and Monte Vista National Wildlife Refuges, administered by the Fish and Wildlife Service, are located within the planning area. Federal lands (1,850,000 acres) bordering the planning area in Colorado are administered by the Rio Grande National Forest. In New Mexico, Federal lands bordering the planning area are administered by BLM.

Maps 2-14 and 2-15 and Table 2-20 show surface and minerals estate management by acreage within the planning area.

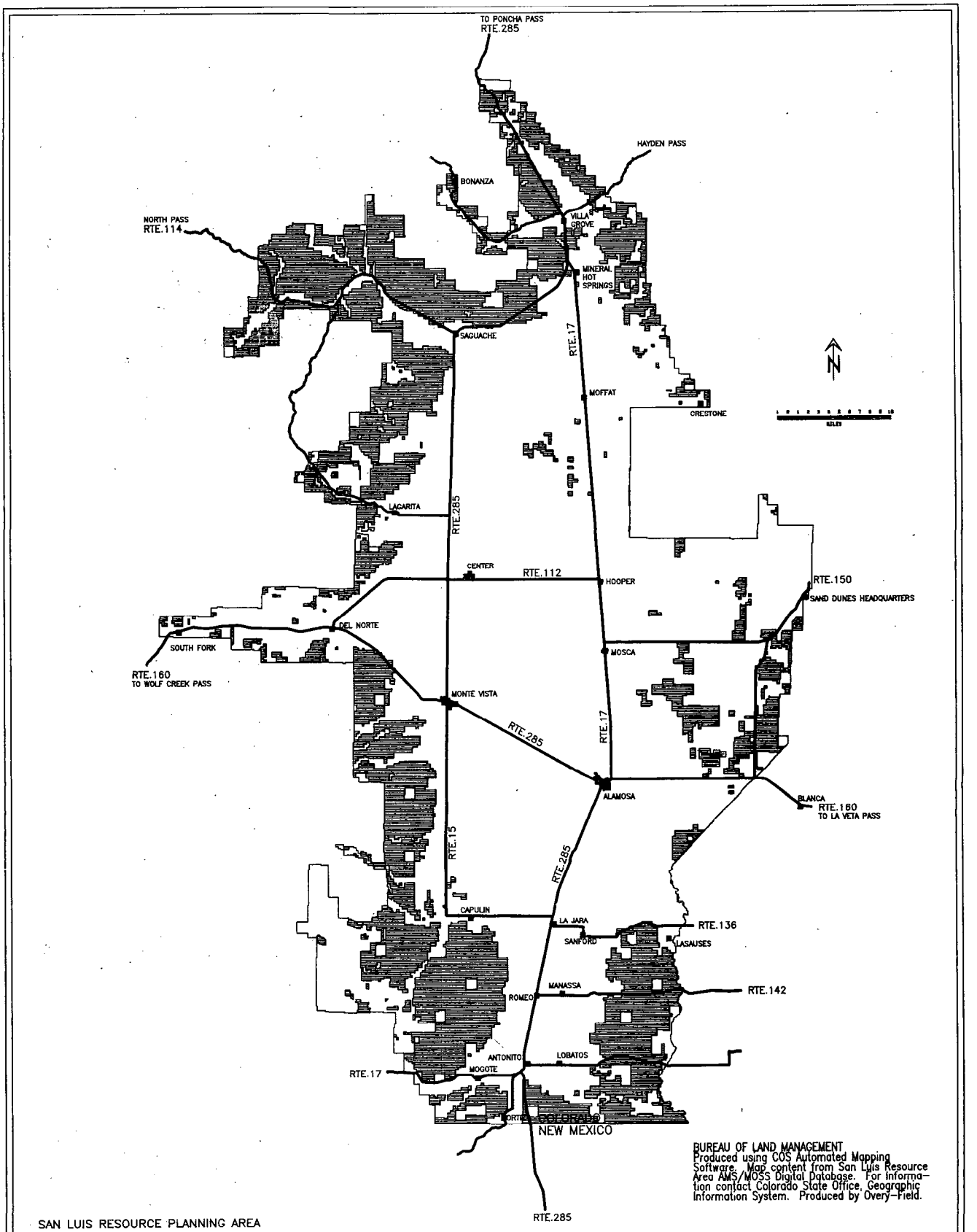
The state of Colorado manages the state lands and the DOW manages five parcels of state land as wildlife areas; Hot Creek, La Jara, Rio Grande Conejos, and the Wetherill Tract. Various Federal, state, and local agencies have management responsibility for lands within the resource area; these agencies and acreages are shown in Table 2-21.

Requests for land use authorizations occur throughout the San Luis Planning Area and are addressed on a demand basis since they are infrequent; however, they have been increasing over the last decade. Approximately 10 applications are processed annually. Unauthorized trash dumps and occupancy and agricultural trespass continue to occur in the planning area.

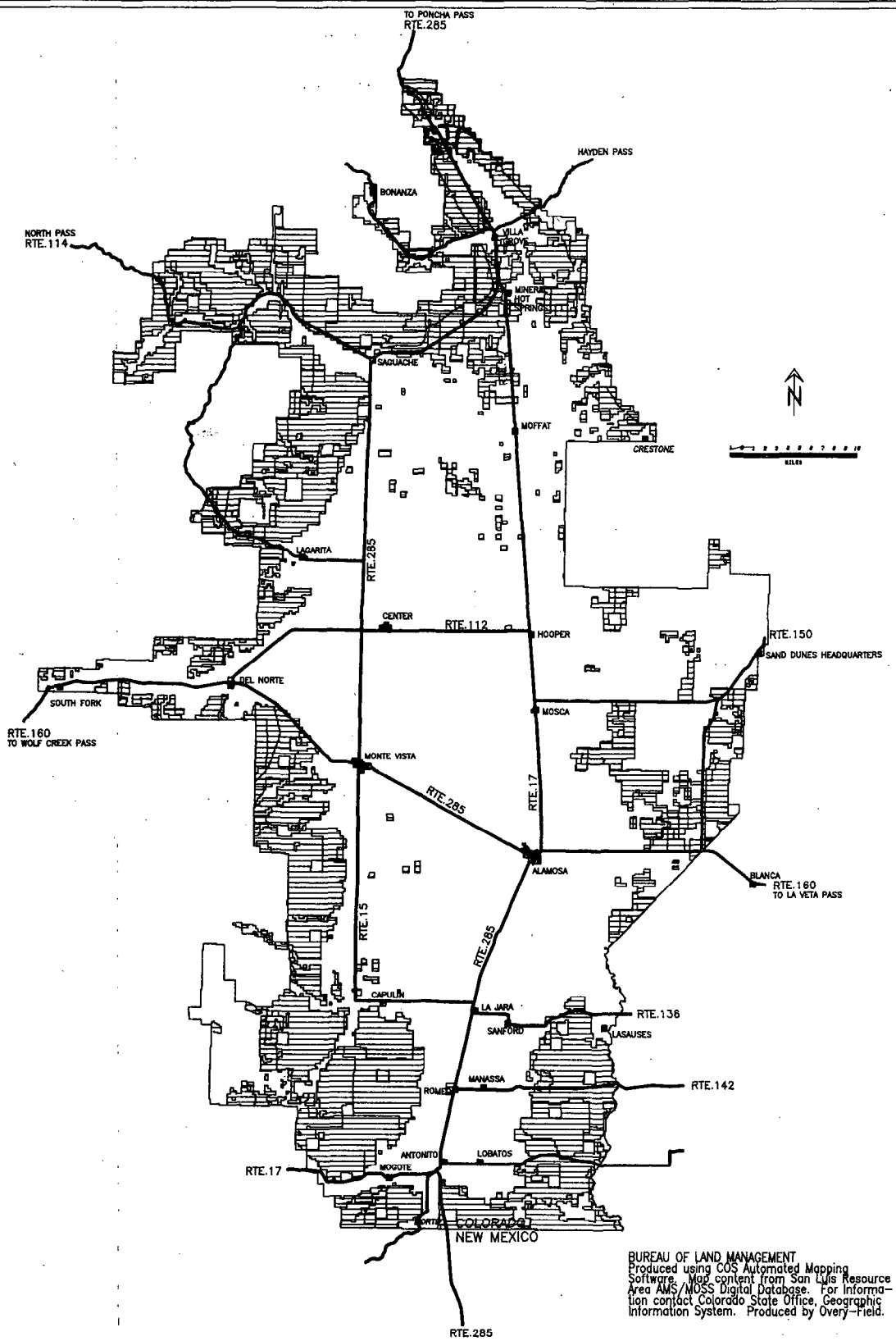
Table 2-20
ACREAGE OF SURFACE LAND AND MINERAL ESTATE MANAGED BY BLM
(Only Lands Within Planning Area Boundary)

| County | BLM [1] | | Private | | State [2] | | Other [3] | | Total | Mineral Estate [4] |
|---|---|---|---|---|---|---|---|---|---|---|
| Alamosa | 46,272 | (11) [5] | 289,385 | (68) | 56,500 | (13) | 36,280 | (9) | 428,437 | 16,259 |
| Conejos | 185,547 | (37) | 248,200 | (49) | 59,203 | (12) | 10,100 | (2) | 499,050 | 22,301 |
| Costilla | 156 [6] | | 0 | | 0 | | 0 | | 156 | 0 |
| Rio Grande | 55,596 | (19) | 198,400 | (69) | 12,212 | (4) | 21,500 | (8) | 287,708 | 13,788 |
| Saguache | 233,106 | (29) | 454,825 | (56) | 92,155 | (11) | 34,336 | (5) | 814,411 | 49,578 |
| TOTAL | 520,677 [7] | | 1,190,810 | | 220,070 | | 102,216 | | 2,029,773 | 101,926 |

[1] BLM acreage contains about 20,000 acres (4 percent) of scattered tracts of BLM land.
[2] Includes 8,607 acres of Colorado Division of Wildlife managed lands.
[3] These figures include Alamosa Refuge (10,350), Monte Vista Refuge (13,839), Great Sand Dunes National Monument (38,659); also, state and county highways and municipal lands.
[4] Federal mineral estate with surface in other ownership.
[5] Number in parentheses indicates percentage of county total.
[6] Private land in Costilla County is not included.
[7] Total acreage underlain by Federal mineral estate.




## Map 2-14
## Bureau of Land Management Land Surface




## Map 2-15

FOR A BETTER PERSPECTIVE OF BLM OWNERSHIP, SEE THE FOLDOUT MAP AT THE BACK OF THE PLAN.

## Bureau of Land Management Subsurface Mineral Estate

Table 2-21
SURFACE LAND MANAGEMENT BY AGENCY IN SAN LUIS PLANNING AREA

| Agency | Land Ownership Acres (Approximately) | Land Ownership Percent (Approximately) |
|---|---|---|
| BLM | 520,677 | 26 |
| USFWS | 24,189 | 1 |
| NPS | 38,659 | 2 |
| USFS | 0 | 0 |
| State Land Board Commission | 211,463 | 10 |
| County | 39,368 | 2 |
| State Parks | 0 | 0 |
| State Wildlife | 8,607 | 1 |
| Private | 1,190,810 | 59 |
| TOTAL | 2,003,773 | 100 |

## Land Tenure Adjustment

Since 1983, five BLM land tracts totaling 444 acres have been sold under land disposal authorities.

The following parcels, which were unsold during the original sale offerings, are currently available for sale:

**New Mexico Principal Meridian**

| | |
|---|---|
| C36840- 3 T.34N., R.11E., Sec. 11, NW¼SW¼ | 40.00 |
| C36840- 5 T.43N., R.10E., Sec. 14, SE¼NW¼ | 40.00 |
| C36840- 6 T.43N., R.10E., Sec. 18, Lots 3, 4, E½SW¼ | 161.44 |
| C36840- 8 T.45N., R.9E., Sec. 13. E½NE¼ | 80.00 |
| C36840-10 T.45N., R.10E., Sec.21, W½SW¼ | 80.00 |
| C36840-11 T.44N., R.7E., Sec. 30, Lot 2 | 60.83 |
| C36840-12 T.44N., R.7E., Sec. 30, NE¼SE¼ | 41.68 |
| C40717- 1 T.37N., R.12E., Sec. 10, S½SE¼ | 80.00 |
| C40717- 2 T.37N., R.12E., Sec. 15, S½NE¼ | 80.00 |
| C40717- 3 T.29S., R.73E., Sec. 31, Lot 2, NE¼NW¼ | 41.68 |

A 5-acre parcel in T.32N., R.8E., Sec. 13 is currently in the process of being sold to the Antonito Catholic Church, which will allow for expansion of the Ortiz Cemetery and also rectify a small trespass problem.

A portion of T.44N., R.7E., Sec. 13, SE1/4SW1/4 will be sold to Mountain Valley Lumber Company, Saguache, Colorado, to allow for expansion of the business and rectify a trespass problem.

These lands and other lands identified for disposal are identified using the following three criteria established in FLPMA: a) small isolated tracts that are difficult or uneconomic to manage, b) parcels no longer needed for the purpose for which they were acquired, and c) tracts that would serve important public objectives when transferred out of Federal ownership. Disposal of these lands could also be accomplished by other authorities; e.g. R&PP, exchange, etc.

Approximately 13,000 acres or 2.5 percent of BLM lands in the planning area have been identified for potential disposal.

In addition to potential disposal lands, almost 57,000 acres of non-Federal lands have been identified for possible acquisition. All these land acquisition tracts would potentially enhance BLM multiple use land and resource management. Typical criteria used for land acquisition are as follows:

1. Private lands within areas recommended as suitable for designation as wilderness or adjacent to such areas where they add to the manageability and scenic value of the unit.
2. Private lands needed for management of wild and scenic rivers and wild and scenic study rivers.
3. Land adjacent to and inholdings within special recreation management areas and high value recreation areas.
4. Potential national or historic trails.
5. Potential natural or research natural areas or areas for cultural or natural history designation.
6. Potential areas of critical environmental concern.
7. Habitat areas of threatened or endangered species.
8. Aquatic, riparian, and wetland habitat areas (streams, rivers, lakes, ponds).
9. Crucial big game winter range.
10. Floodplain areas (100-year flood) as defined in *Executive Order 11988*, dated May 24, 1977.
11. Private land that would improve access to BLM land.
12. Lands that would improve manageability of existing BLM land and uses by eliminating non-Federal inholdings with potential for conflicting uses.

13. Lands that would create more manageable land ownership patterns, thereby decreasing administrative costs of management.

The Canon City BLM District is participating in a land exchange program with other government agencies and interested parties to facilitate land exchanges. BLM is also cooperating with the U.S. Fish and Wildlife Service to provide lands for exchange so they can remove state owned lands from within their boundaries. BLM may acquire land or easements across land that is administered by the Farmers Home Administration for conservation purposes.

Maps 2-16 and 2-17 show BLM lands identified for land tenure opportunities.

## Withdrawals

As required by FLPMA, all withdrawals within the planning area are to be reviewed by 1991 to determine if the statutory objectives of the withdrawals are being met. This review is being done as part of the San Luis RMP. In addition to this review, all withdrawals held by an agency of the U.S. Department of the Interior (USDI) or U.S. Department of Agriculture (USDA) are subject to continual review with some exceptions as listed in FLPMA, Sec. 204, (l)(1).

BLM has a 5,500-acre withdrawal on the Blanca WHA. The Rio Grande National Forest has two administrative sites—Upper Saguache Guard Station (160 acres) and the Brewery Creek Guard Station (40 acres), on BLM land. These withdrawals segregate the affected lands from operation of the general mining laws. BLM has requested that the forest service relinquish all but 10 acres on each administrative site, and this action is currently in progress. The returned acres would be reopened for multiple resource management. By written agreement with the forest service, the entire Upper Saguache site (160 acres) would continue to be used by the Saguache Ranger District when needed to pasture their horses.

BLM has about 5,310 acres of public water reserves (PWRs) scattered throughout the resource area. These withdrawals are generally 40-acre parcels that contain a water source reserved to the United States. The total acres contain a 110-acre reserve (PWR 116) along the Rio Grande River.

BLM can designate powersite withdrawals to identify, withdraw, and protect potential waterpower sites. FERC issues preliminary permits and licenses for construction of hydroelectric facilities on BLM land. An existing powersite withdrawal (Power Site Classification 393), totaling about 2,736 acres, is located along the Rio Grande River in the southeastern corner of the planning area. This powersite classification, under jurisdiction of BLM, withdraws the affected lands from disposal or permanent land use authorizations that would interfere with or preclude the development of the waterpower potential. It overlaps Public Water Reserve 161 in one area along the river.

Decisions on the continuance or termination of these withdrawals will be addressed in each alternative.

Recreation and Public Purposes Act (R&PP) patents for Pike Stockade and the Monte Vista City Park are currently active in the planning area.

An R&PP lease for the San Luis Valley Rifle Range is presently being processed.

## Access Acquisition

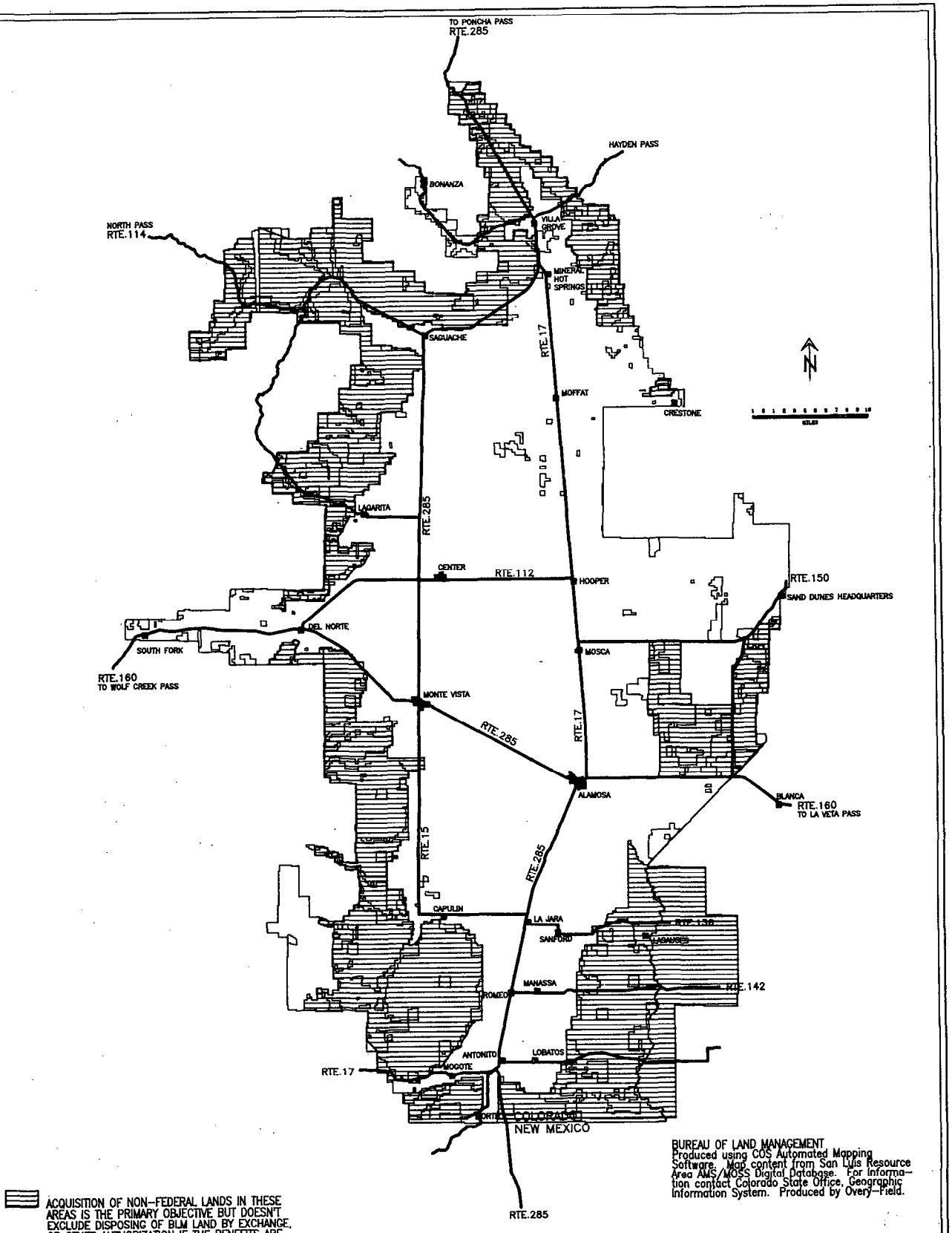
Lack of legal access and poor road conditions are factors limiting access to BLM lands. Several roads in the planning area require easement acquisition for access to BLM tracts to be legal. BLM actively acquires legal access as needs and opportunities arise. All forms of access acquisition are considered including negotiated easements, cooperative right-of-way agreements, and exchange. The Access and Transportation section contains more detailed information.

## Rights-of-Way and Utility Corridors

There are numerous utility rights-of-way (ROWs) in the planning area. These are mostly small and requested by the public. The SLRA has no designated utility corridors; however, utility corridors are considered. The 1986 Western Regional Corridor Study (WRCS) will be used to consider designated corridors throughout the planning area during the RMP process.

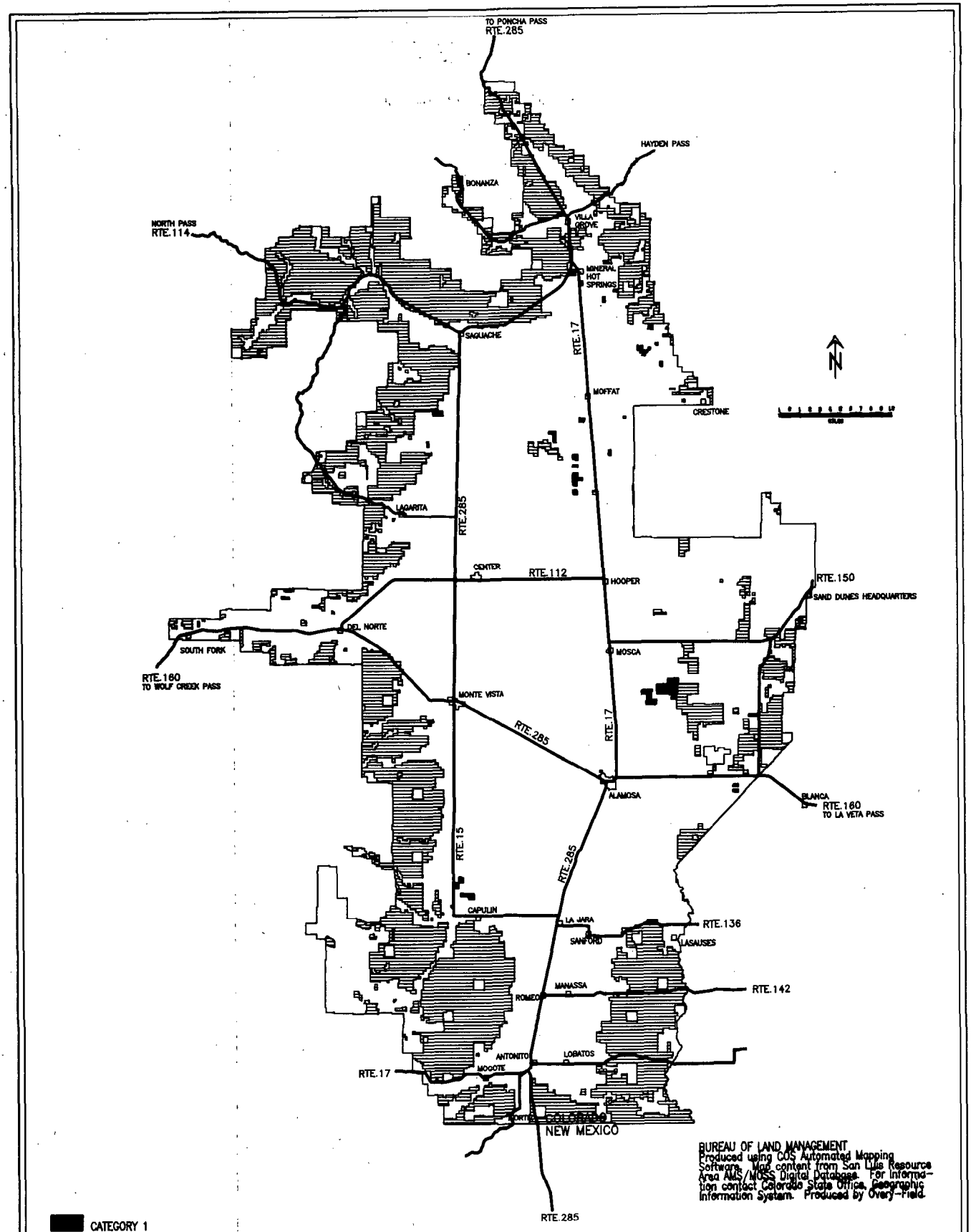
The study correlates very closely with existing utility lines in the planning area; therefore, in this document proposed utility corridors and existing utility lines can be considered the same entity. Existing lines were constructed in natural crossings (passes, etc.) and the corridors proposed by the WRCS in the SLRA (Map 2-18) are in the same locations. Since the study was a broad, general overview, the map, showing more specific locations, will aid in making more definite management decisions.

The corridor study has five main proposed corridors. A description of each corridor and all other associated pertinent information follows:



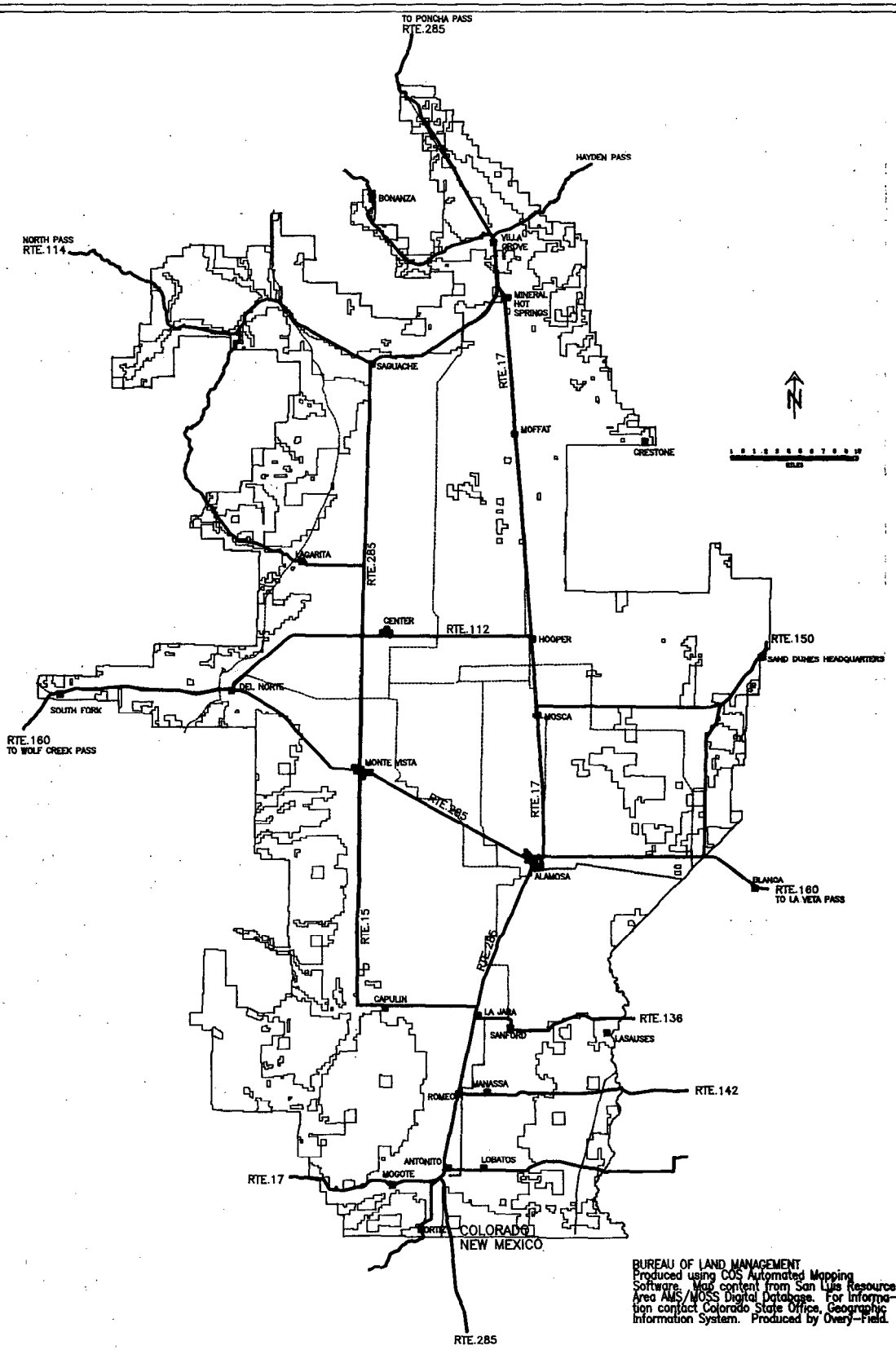

FOR A BETTER PERSPECTIVE OF BLM OWNERSHIP, SEE THE FOLDOUT MAP AT THE BACK OF THE PLAN.

## Map 2-16
## Land Tenure Opportunities—Acquisition




Map 2-17
Land Tenure Opportunities—Disposal

POSAL




BUREAU OF LAND MANAGEMENT
Produced using COS Automated Mapping Software. Map content from San Luis Resource Area AMS/MOSS Digital Database. For information contact Colorado State Office, Geographic Information System. Produced by Overy-Field.

UTILITY CORRIDOR - PROPOSED

FOR A BETTER PERSPECTIVE OF BLM OWNERSHIP, SEE THE FOLDOUT MAP AT THE BACK OF THE PLAN.

## Map 2-18
## Proposed Utility Corridors

**Corridor A:** This extends from Poncha Pass to Antonito and has up to three main lines until it finally terminates in Antonito. It is considered one main corridor and contains the following types of lines, spur lines, etc.: 69 kV line; 115 kV line; 245 kV line; telephone lines; and main spur lines to Bonanza, Saguache, Crestone, Monte Vista, and Del Norte with secondary spurs to smaller communities and individual rural residences.

**Corridor B:** This is a gas pipeline belonging to Western Slope Gas Company that extends from south of Poncha Pass, then west of Saguache, through Del Norte, and southwest to Pagosa Springs. It has a main spur into Saguache, Del Norte, Monte Vista, and Alamosa.

**Corridor C:** This begins at Del Norte and extends west to South Fork and beyond. It contains electrical and telephone lines and necessary secondary spurs to rural residences.

**Corridor D:** This comes in from the east and ends in Alamosa It contains electrical and telephone lines with secondary spurs to rural residences.

**Corridor E:** This is a proposed 345 kV electrical line from Taos, New Mexico, to Center, Colorado. At the present time, it is not active because of lack of funds. It may be reviewed sometime in the future.

Only those locations where these corridors cross BLM lands within the SLRA boundary are of concern in this RMP. Crossings occur mostly in the northern and western parts of the resource area. Smaller amounts of BLM land are involved in the southern and eastern parts of the planning area.

There is only one proposed corridor from New Mexico into the southern part of the planning area. Since there is no mountain range on the south, construction would be relatively easy.

Corridors A through E will be considered in this plan. Corridor E is a potential corridor from New Mexico into Colorado. If selected, these corridors would be preferred locations for future large ROW grants.

Secondary spur lines extending from the main corridors to the smaller towns generally follow main highways, etc., and the land involved with these spurs is mostly private. It is expected that any new ROW spurs would use these existing spurs and have little or no effect on BLM lands.

Location, width, and other specifications of ROW grants in designated corridors would be dependent on the RMP alternatives; however, none of the designated corridors would be eliminated.

If the corridor concept is adopted, utility lines should be placed in designated corridors. New locations, however, would not be eliminated from consideration if good justification were provided.

These corridors would be the same as the existing utility ROWs since they are located in logical locations because of the planning area topography. Possible future development of the Taos 345 kV electric line from Taos, New Mexico, to Center, Colorado, could potentially involve a new corridor location. Telephone lines (overhead and buried), electrical lines, and gas pipelines occupy rights-of-way throughout the planning area. There is one communication facility on BLM land (Zapata Falls) that is managed for multiple users. Public Service Company of Colorado has one site for their own use located on BLM land between Monte Vista and Del Norte.

# WILDERNESS MANAGEMENT

The six wilderness study areas (WSAs) in the planning area are shown on Table 2-22. One of these, San Luis Hills WSA, was studied under the authority of Section 603a of the *Federal Land Policy and Management Act* (FLPMA). The remaining five, Sand Castle, Black Canyon, South Piney Creek, Papa Keal, and Zapata Creek WSAs, were studied under the authority of Section 202 of FLPMA. The Sand Castle WSA (1,644 acres) is adjacent to the Great Sand Dunes National Monument. The other four WSAs, totaling 4,910 acres, are contiguous to a U.S. Forest Service (USFS) WSA and are included in their study of the Sangre de Cristo range. The USFS has proposed to Congress and the President that 3,300 acres be designated as wilderness. It is expected that these acres will in fact be designated wilderness and that management jurisdiction will remain with BLM. Management of the remaining 1,610 acres will be analyzed in the various RMP alternatives, along with the San Luis Hills and Sand Castle WSAs.

Table 2-22
WSAs IN THE SAN LUIS RESOURCE AREA

| BLM Unit No. | Name | Acres |
|---|---|---|
| CO-050-131 | Black Canyon | 2,300 |
| CO-050-132B | South Piney Creek | 870 |
| CO-050-135 | Sand Castle | 1,644 |
| CO-050-137 | Papa Keal | 1,020 |
| CO-050-139B | Zapata Creek | 720 |
| CO-050-141 | San Luis Hills | 10,240 |
| TOTAL | | 16,794 |

The Canon City District Wilderness Final Environmental Impact Statement has been printed and includes the management preference of nonsuitable wilderness designation for Sand Castle and San Luis Hills WSAs. Under the current interim management guidance, a proposed activity in a WSA must meet three requirements before it is approved. The activity must (1) be temporary; (2) not cause an impact that would be substantially noticeable following reclamation; and (3) not change the WSA suitability or nonsuitability for wilderness designation. Activities with valid existing rights are allowed to impair wilderness characteristics in a WSA provided there is no unnecessary and undue degradation.

All WSAs have outstanding opportunities for primitive and unconfined recreation, which include hiking, camping, viewing, hunting, wildlife photography, and other similar activities. The units have few imprints of man; however, manmade influences outside the units are visible. All of the wilderness characteristics identified and inventoried in 1980 are present and stable. Current trend indicates continued and growing WSA visitor use. The location of the six WSAs is shown on Map 2-19.

# AREAS OF SPECIAL CONCERN

Twenty-two areas/sites were nominated initially for consideration as areas of special concern within the San Luis Planning Area. These areas/sites vary in resource values and represent lands that may require specialized management to enhance or preserve the unique values (see Appendix H). BLM has four types of areas of special concern considered within this RMP: 1) special recreation management area (SRMA); 2) wildlife habitat area (WHA); 3) areas of critical environmental concern (ACEC); and 4) wild and scenic river area. All 22 nominated areas/sites were screened for potential designation as ACECs. Two of these were combined with other areas/sites, and four were dropped from consideration.

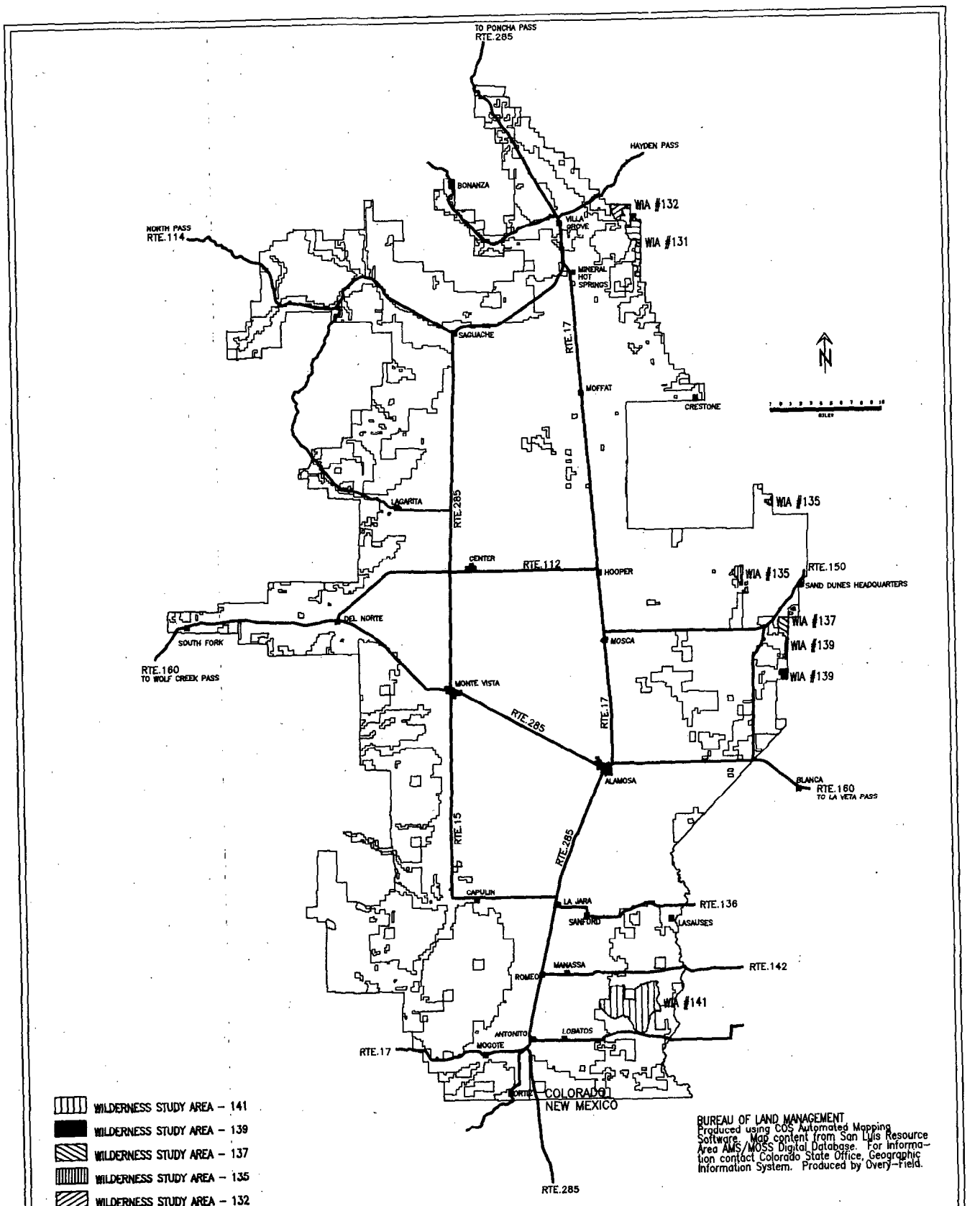
Of the 22 initially nominated areas/sites, 6 are wilderness study areas (WSAs) that were identified as part of the BLM wilderness management program. With the exception of the San Luis Hills WSA, these are small, isolated tracts with scenic or recreational values. Black Canyon, South Piney Creek, Zapata Creek, and Papa Keal are all adjacent to the Rio Grande National Forest. These four areas/sites are proposed for inclusion with the forest service units to be considered by Congress for wilderness designation.

During the preliminary review of this document by user input groups, several new areas were nominated and some additional information was provided on previously nominated areas. Recommendations were received requesting that Wagon Ruts, Dry Creek/Rock Creek, Bishop Rock, and Elephant Rocks be re-evaluated in the planning process. Because of the request, these sites were discussed again with the area manager; the conclusions and rationale are shown in Table H-3, Appendix H. Two new sites were nominated during this informal review process; i.e., Carnero Canyon and Rajadero Canyon. These sites were screened for determination of suitability as ACECs. The conclusions and rational for these two new nominations are also shown in Table H-3, Appendix H.

The Sand Castle WSA/Cattleguard Folsom archaeological site, which is a major archaeological excavation being undertaken by the Smithsonian Institution, was also nominated as an ACEC and is also within a potentially significant recreation OHV riding area. This site is of considerable interest from a cultural and a recreational standpoint (see the archaeological and the recreational sections of this chapter).

The Elephant Rocks area, north of Del Norte, Colorado, is a unique collection of rock formations. Also there are several species of rare plants in this area as determined by the Colorado Natural Areas Program (CNAP). The site may require special management to help conserve these plants and to retain the visual integrity of Elephant Rocks themselves. Currently, the site is in good condition with a stable trend. During the public cultural workshop, it was noted that old freight wagon ruts of regional significance exist north and east of the original boundary, and subsequently the area of consideration has been expanded to include these historical sites.

Recreational value is the primary quality in the Rio Grande Wild and Scenic River/Twin Peaks area. The Rio Grande River cuts a gorge through the plains at the eastern end of the Punche Valley. From the Lobatos Bridge south into New Mexico, the river is fairly inaccessible. This 8.8-mile segment (1,760 acres) of the Rio Grande River Corridor has outstandingly remarkable values and is considered for potential wild and scenic designation. A wild and scenic river study for this area has been done in conjunction with this RMP (Appendix E). In addition to the significant recreational and scenic values in the Rio Grande River Corridor, riparian resources of potential significance have also been identified. The area of this upper box is also called the Rio Grande Box Area and has been combined with the corridor nomination. The Rio Grande River Corridor is important for the recreation and natural environment experience for floatboaters and river recreationists; e.g., fishing, picnicking, etc. The poor condition and trend of riparian vegetation in the Rio Grande River Corridor are due to uncontrolled use. Twin Peaks, one of which is in New Mexico and the other in Colorado, are included in this nominated area (Colorado portion only). The condition




**Map 2-19**
**Wilderness Study Areas**

FOR A BETTER PERSPECTIVE OF BLM OWNERSHIP, SEE THE FOLDOUT MAP AT THE BACK OF THE PLAN.

and trend of the Twin Peaks area are good because of lack of human intrusion and controlled grazing.

There are also several other nominated areas in the San Luis Valley. The first is Flat Top, a large mesa formation south of Alamosa, Colorado. This area is visible throughout the San Luis Valley and is a prominent landmark. The site is inaccessible other than by foot or pack animal. There has been no resource damage to the top of this remote rock-rimmed mesa because of its inaccessibility. CNAP has identified several species of rare plants along the rim of Flat Top. These plants require special management for preservation or enhancement. The present condition of Flat Top is good with a stable trend. This mesa appears to have very outstanding untrammeled wild land recreation resources.

Bishop Rock, located west of Monte Vista, Colorado, along Rock Creek, was nominated as an area needing special management. This site includes the area along Rock Creek and Dry Creek to the north of the actual "Bishop Rock" and includes some significant cultural resources, specifically 30 to 80 sites of ancient rock art. Bishop Rock is a very unusual rock outcrop of 90 to 110 feet in height that looks like a "bishop" pointing towards the San Juan Mountains. Bishop Rock is of unique and scenic value, with the Rock Creek and Dry Creek timbered drainages adding to the scenic and cultural quality of the site. Dry Creek also contains numerous archaeological sites such as petroglyphs and pictographs. The immediate site of Bishop Rock is in good condition at present and the trend is stable. The cultural sites to the north, however, are deteriorating because of continual vandalism.

In addition to the previously mentioned nominated areas, several riparian habitat zones have been identified. They are La Jara Creek, La Garita Creek, Ford Creek (Ford Creek has been incorporated into the Trickle Mountain area), and the previously mentioned Rio Grande River Corridor area. These lands contain riparian habitat zones that require special management. The condition and trend areas are stable to deteriorating with a very strong potential for rehabilitation and improvement. Another site requiring special management is the Big Horn Erosion Area, which consists of erosional soils that are being damaged. The condition and trend of the Big Horn area are poor and deteriorating. The Poncha Pass Conservation Area area is an older designated resource conservation area (RCA) of some 5,870 acres. By virtue of its previous designation, it may need some special management. The values involved are recreation, visual resources, and scenic and ecological/scientific study. The condition and trend of this nominated area are stable to improving.

Several currently managed areas were also nominated for special management, including the Trickle Mountain Wildlife Habitat Area, located west of Saguache, Colorado. Trickle Mountain is currently intensively managed for wildlife needs and is well defined as a special management area. Ford Creek area has been combined with Trickle Mountain. Blanca Wildlife Habitat, east of Alamosa, Colorado, is also an intensively managed and developed habitat for waterfowl and is currently managed as a special area for wildlife.

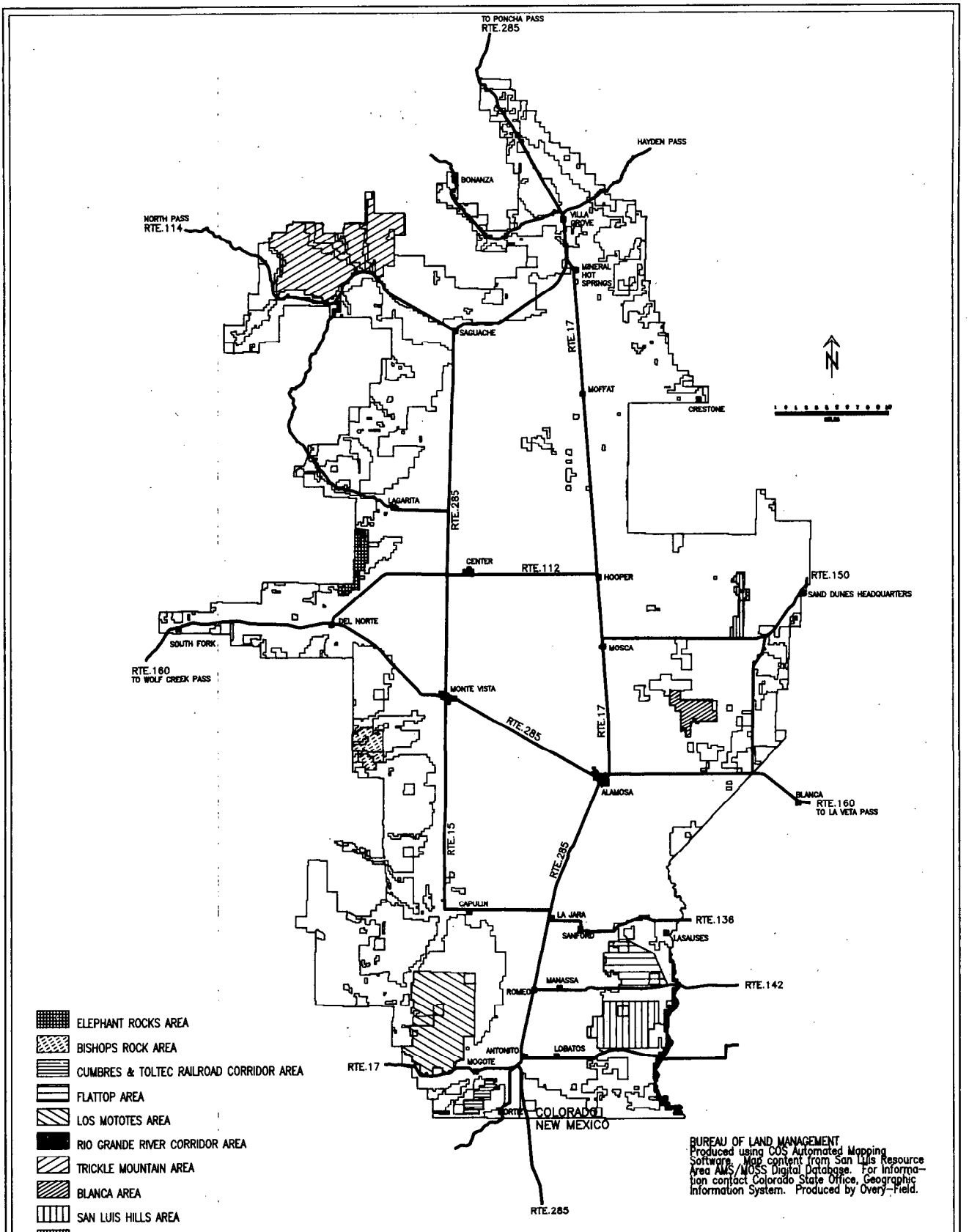
Another nominated area for special management is the Cumbres and Toltec Railroad scenic corridor. This is the right-of-way and associated immediate view area of the Cumbres and Toltec Scenic Railroad, a national historic property that crosses about 5 miles of BLM land south of Antonito, Colorado. The scenic quality of the land contributes to the historic characteristics of the railroad. Presently the scenic values are excellent and are not in a deteriorating condition; however, this could change if development occurred along the railroad or within the scenic area of the Cumbres and Toltec Railroad.

The last nominated area potentially needing special management is Los Mogotes, located south of Alamosa near the town of Mogote. The primary values to be considered are crucial wildlife winter range for antelope, elk, and other animals. Numerous wildlife species use this area, and it is considered very important for their winter survival.

As part of the ACEC process, each of the previously described areas have been screened by the RMP team to determine: 1) whether they actually need special management; 2) which type of special management would be most appropriate; and 3) if they meet the "relevance" and "importance" criteria for potential consideration as an ACEC as defined in the BLM 1617 Manual. The screening process identifies the qualities in an area to determine whether or not special management is necessary.

Prior to the RMP team screening, a public meeting was held in Alamosa, Colorado, on February 3, 1988, to solicit public input for areas needing special management (SRMA, WHA, ACEC, etc.), including the nominations for other areas not previously identified. No new areas were nominated at that time. Nominations were closed February 29, 1988, and only Los Mogotes came forth as a new area. Following this period of nominations, the RMP team and management met to "screen" these nominations for special management. The results of this are shown in Table 2-23.

Those areas that did not meet the ACEC importance and relevance criteria or were not suitable for special management have been eliminated from further consideration and will not be further analyzed in the RMP. Those areas that either meet the criteria or are considered to need special management (Map 2-20) will be carried forward and analyzed in the RMP. Appendix H provides more background information on this screening process in selecting these areas for special management.




FOR A BETTER PERSPECTIVE OF BLM OWNERSHIP, SEE THE FOLDOUT MAP AT THE BACK OF THE PLAN.

## Map 2-20
## Areas of Special Concern

Table 2-23
MANAGEMENT AREA
SCREENING RESULTS

| Nominated Areas | Meets ACEC Criteria | Suitable for Other Special Management[1] | Analyze in RMP |
|---|---|---|---|
| Black Canyon WSA | No | No | No |
| South Piney Creek WSA | No | No | No |
| Sand Castle WSA | Yes | Yes | Yes |
| Papa Keal WSA | No | No | No |
| Zapata Creek WSA | No | No | No |
| San Luis Hills WSA | Yes | No | Yes |
| Blanca Wildlife Area | Yes | Yes | Yes |
| Trickle Mountain | Yes | Yes | Yes |
| Rio Grande Corridor/Box | Yes | Yes | Yes |
| Elephant Rocks/ Wagon Trails | Yes | No | Yes |
| Paleo Indian/ Cattleguard Area | Yes | Yes | Yes |
| Twin Peaks Area | No | No | No |
| Flat Top Mesa Area | Yes | No | Yes |
| La Jara Creek | No | No | No |
| La Garita Creek | No | No | No |
| Rio Grande River Box Area | Yes | Yes | Yes |
| Bishop Rock/Dry Creek | Yes | No | Yes |
| Poncha Pass Conservation Area | No | No | No |
| Big Horn Erosion Area | No | No | No |
| Cumbres and Toltec Scenic RR | Yes | No | Yes |
| Ford Creek Area | Yes | Yes | Yes |
| Los Mogotes Area | Yes | No | Yes |

[1] Areas not meeting ACEC criteria that need some special management; e.g., SMRAs, WHAs.

# ACCESS AND TRANSPORTATION MANAGEMENT

Roads within the planning area, identified on the BLM San Luis Resource Area Transportation plan, are shown in Table 2-24.

There are 10 pending access acquisition cases in the planning area. Only one of these is near completion at this time. These easements are needed to ensure continuous public access for recreation, hunting, range administration, timber management, fire management, etc.

Table 2-24
MILES OF ROAD ACCESS WITHIN
THE PLANNING AREA IDENTIFIED ON
THE TRANSPORTATION PLAN

| Type of Access | Approximate Mileage |
|---|---|
| Federal and state highways | 400 |
| County roads | 386 |
| BLM roads (maintained) | 237 |
| BLM roads (not maintained) | 166 |
| Trails | 0 |

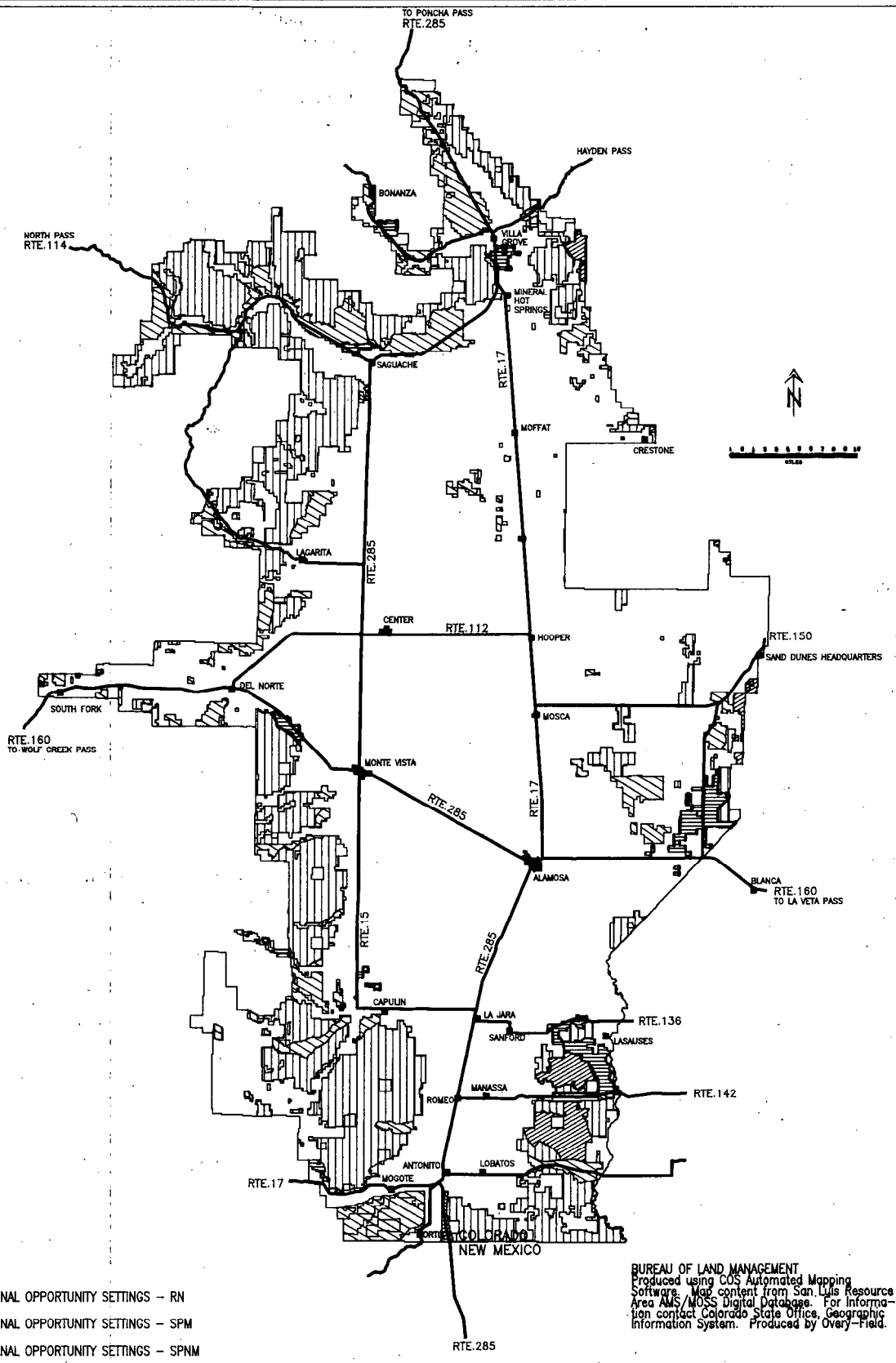
The majority of roads in the planning area originated as trails used primarily for recreation, ranching, and mining activities. In this planning area, BLM has no trails groomed for motorcycles, snowmobiling, horseback riding, or hiking. Most roads and areas, however, are open to these types of activities unless posted otherwise.

Some BLM roads are passible only during dry soil conditions and many require four-wheel drive and high clearance vehicles. A few roads in the planning area are closed temporarily during spring thaw when water saturated soil conditions occur. Roads and the surrounding environment are most fragile and susceptible to damage at this time.

Table 2-24 shows mileage of roads maintained by BLM in the planning area. These are collector and local roads of high to medium use and maintained periodically to accommodate user demand. Also shown on Table 2-24 are the miles not usually maintained. These roads are categorized as resource roads and are light duty roads used primarily by permittees and for BLM administrative purposes. Generally these roads are not on the Transportation Plan maintenance schedule; however, maintenance is performed as needed for erosion control measures.

# RECREATION MANAGEMENT

The resource area provides a significant amount of dispersed outdoor recreation opportunities with the vast majority of the area managed as the San Luis Extensive Recreation Management Area. This includes approximately 520,677 acres in four recreational opportunity settings (see Map 2-21 and Table 2-25).




## Map 2-21
## Recreation Opportunity Settings

FOR A BETTER PERSPECTIVE OF BLM OWNERSHIP, SEE THE FOLDOUT MAP AT THE BACK OF THE PLAN.

## Table 2-25
## RECREATION OPPORTUNITY SPECTRUM CLASSIFICATION

| ROS Setting Class [1] | Acres | Percent |
|---|---|---|
| Semi-primitive nonmotorized (SPNM) | 23,299 | 4 |
| Semi-primitive motorized (SPM) | 341,205 | 66 |
| Roaded Natural (RN) | 127,696 | 24 |
| Rural (R) | 28,477 | 6 |
| | 520,677 | 100 |

[1] Definitions
SPNM — 1/2 mile from any road, no noticeable visual nor audio intrusions
SPM — 1/2 mile from any improved road, no noticeable visual nor audio intrusions
RN — 1/4 mile from any primary or secondary road, no visual intrusion in foreground
MR — 0 miles from any road — all roads accepted

The variety of appealing land forms from mountains to valleys; vegetation from trees to sage; and a variety of topography from sand dunes to mountain streams offers a significant number of diverse settings for outdoor recreational activities. Specific available opportunities include: hunting, fishing, viewing, off-highway vehicle (OHV) use, hiking, picnicking, camping, vegetative and mineral gathering, snowmobiling, cross-country skiing, general leisure, and sightseeing. Although this region has the next lowest population density in the state, national attention focuses on attractions in the area such as the Great Sand Dunes National Monument, the Sangre de Cristo Mountains, the Rio Grande River Corridor, two national wildlife refuges, and the Rio Grande National Forest.

Tables 2-26 and 2-27 show the estimated number of visits and population user data on BLM lands in the planning area.

## Table 2-26
## ESTIMATED ANNUAL VISITOR USE BY MANAGEMENT ALTERNATIVE

| Activity | Number of Annual Visits on BLM Land [1] | | | | Length of Stay Factors (Hours)[2] | Annual Number of Visitor Hours [3] | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Existing Management | Natural Resource Enhancement | Resource Production Enhancement | Preferred | | Existing Management | Natural Resources Enhancement | Resource Production Enhancement | Preferred |
| OHV | 18,940 | 18,600 | 18,940 | 19,070 | 3.0 | 56,820 | 55,800 | 56,820 | 57,210 |
| Other Motorized | 8,920 | 7,140 | 9,990 | 9,400 | 3.0 | 26,760 | 22,420 | 29,970 | 28,200 |
| Nonmotorized | 14,870 | 17,840 | 11,150 | 14,870 | 4.0 | 59,480 | 71,360 | 44,600 | 59,480 |
| Camping | 8,740 | 8,910 | 8,350 | 8,740 | 12.0 | 104,880 | 106,920 | 100,200 | 104,880 |
| Hunting | 14,090[4] | 14,650 | 13,530 | 14,500 | 7.0 | 98,630 | 102,550 | 94,710 | 101,500 |
| Land Based | 24,580 | 25,070 | 23,600 | 25,070 | 3.0 | 73,740 | 75,210 | 70,210 | 75,210 |
| Fishing | 37,810 | 38,570 | 37,050 | 37,810 | 4.5 | 170,145 | 173,565 | 166,725 | 170,145 |
| Boating | 1,260 | 1,010 | 1,510 | 1,200 | 10.0 | 12,600 | 10,100 | 15,100 | 12,000 |
| Other Water | 7,270 | 7,500 | 7,000 | 7,270 | 1.5 | 10,905 | 11,250 | 10,500 | 10,905 |
| Winter Sports | 200 | 240 | 220 | 240 | 5.0 | 1,000 | 1,200 | 1,100 | 1,200 |
| Snowmobiling | 530 | 450 | 500 | 530 | 3.5 | 1,855 | 1,575 | 2,030 | 1,855 |
| Total | 137,210 | 139,980 | 131,920 | 138,700 | | 616,815 | 631,950 | 591,965 | 622,585 |

[1] The total acreage of BLM land in the SLRMP area (520,677) was divided by the total number of all public land acres in Region 8 (2,787,247) 19 percent.
[2] Length of stay factors are from USFS RIM information for Rocky Mountain, Region 2.
[3] 12-hour visitor days are used to convert hours to Recreation Visitor Days (RVD).
[4] The number of resident hunters (11,180) was increased by 26 percent to include nonresidents.

## Table 2-27
## POPULATION USER DATA

| Activity | Estimated Percent of Resource Population Participating[1] | Number of People Participating[2] | Participation Rates (days per year) Per Capita[3] | Number of Annual Visits in Region 8 | |
|---|---|---|---|---|---|
| | | | | 1988 | 2008 [4] |
| OHV | 32.8 | 13,922 | 7.16 | 99,682 | 113,438 |
| Other | | | | | |
| Motorized | 15.4 | 6,679 | 7.03 | 46,953 | 53,433 |
| Nonmotorized | 32.7 | 14,182 | 5.52 | 78,295 | 89,100 |
| Camping | 30.2 | 13,098 | 3.51 | 45,974 | 52,318 |
| Hunting | 26.4 | 11,450 | 5.14 | 58,853 | 66,975 |
| Land Based | 50.9 | 22,075 | 5.86 | 129,360 | 147,212 |
| Fishing | 45.3 | 19,647 | 10.13 | 199,024 | 226,489 |
| Boating | 15.1 | 6,549 | 1.01 | 6,614 | 7,527 |
| Other Water | 24.5 | 10,626 | 3.60 | 38,254 | 43,533 |
| Winter Sports | 7.8 | 3,383 | 0.31 | 1,049 | 1,194 |
| Snowmobiling | 11.0 | 5,118 | 0.55 | 2,815 | 3,203 |

[1] Population percentages are from 1981 Colorado Outdoor Recreation Plan (SCORP), Colorado Division of Parks and Outdoor Recreation.
[2] Estimated 1985 population of SCORP Region 8 is 43,370.
[3] From SCORP.
[4] Assuming a 13.8 percent increase over two decades.

Total dispersed recreation is expected to increase at a rate of about 6.9 percent per decade. As travel expenses increase, the amount of dispersed recreation use by local residents would increase and visitors would lengthen the duration of their visits. The Colorado Outdoor Recreation Plan is very general. It predicts 5.2 percent regional population growth and recommends a high priority for picnicking, fishing, hunting, and snowmobiling.

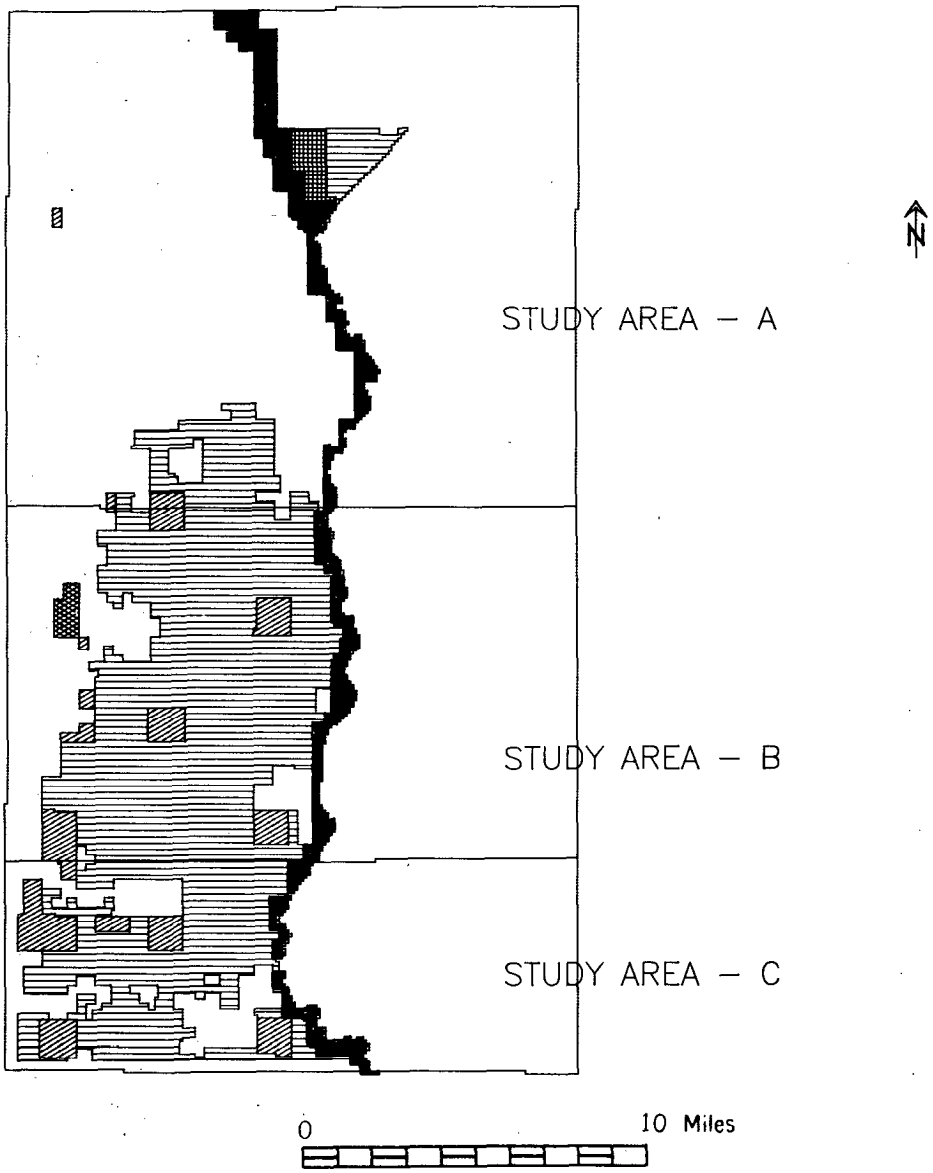
The Blanca Management Area has the only developed recreational facilities in the San Luis Extensive Recreation Management Area. It consists of a network of three roads providing access to three restrooms with parking areas and trash receptacles. The area provides excellent wildlife viewing, hunting, and fishing opportunities. A number of trails and fence-crossing entrance ladders are provided to allow for picnicking, hiking, camping, and nature study opportunities.

The Rio Grande River Corridor Special Recreation Management Area (SRMA) comprises 4,395 acres of BLM land and is defined as a tract of land from the New Mexico State line to the Lasauses Cemetery approximately one-quarter-mile wide. A portion of the river corridor (1,760 acres), south of the Lobatos Bridge to the New Mexico State line, is considered for wild and scenic designation. This area provides an outstanding primitive floatboating opportunity as well as fishing, viewing, hiking, and camping in a primitive and a semiprimitive setting.

It is estimated that approximately 500 commercial and private float trips are made annually on the Rio Grande River from the Lobatos Bridge south. This floatboating area is within the proposed 8.8-mile wild and scenic segment of the river. Recreation use on the river is limited by a very short boating season. Nesting waterfowl, birds of prey, and the opportunity for solitude are among the major attractions for visitors to the Rio Grande Special Recreation Management Area (SRMA).

A study report was written during preparation of this RMP to assess the eligibility, classification, and suitability of this river segment to be included in the National System of Wild and Scenic Rivers (Appendix E). Map 2-22 shows the location of the Rio Grande River Corridor SRMA (Segments B and C). Segment C of the study area adjoins the Taos Resource Area where the Rio Grande River is a National Wild and Scenic River.

Factors such as population growth and more leisure time are expected to cause an increase in most recreational activities. There has been an increase in floatboating activity




**Map 2-22**
**Rio Grande River Corridor Study Area**

on the Rio Grande River reflecting the national trend. The OHV restrictions on Trickle Mountain have stabilized the quality of the resources, but this stability may prove to be only temporary. An increase in OHV demand and lack of adequate funding for management and maintenance may allow further deterioration of the recreation quality and land resource.

During 1987, several meetings and one field trip were held with the Colorado State Parks and Recreation people to discuss and view some of the BLM lands that show some capability to provide for intensive recreation development; i.e., a state park or recreation area. As a result of these visits, seven sites will be considered for more development. The first was the 1,200-acre sand dunes area south of the Sand Castle WSA and adjacent to the highway. This area is now used extensively for dune buggy riding/all terrain vehicle (ATV) recreation and would have the potential of providing even more opportunity if developed with some public facilities; e.g., parking area, restrooms, picnic tables, etc. This area is also very close to the San Luis Lakes State Recreation Area (2.5 miles to the west), and administrative management would be very practical. A second area of interest was the 240-acre Zapata Falls area located 6 to 7 miles east of the San Luis Lakes State Recreation Area and just south of the entrance to the Sand Dunes National Monument. This area appears to have very significant potential for an overnight recreation area with 40 acres of almost flat, tree-covered potential campground and excellent scenic vistas of the valley. It is also adjacent to the state-owned 40-foot waterfall/picnic site. Five other BLM-administered areas, which seem to have good potential for public recreation development or have significant natural/cultural attractions, were discussed. These are: 1) Elephant Rocks/Wagon Tracks Area, 2) Blanca Wildlife Management Area, 3) Bishop Rock/Cultural Area, 4) Mishak Lakes Area, and 5) Rio Grande River Special Recreation Management Area. To date, we have nothing in the form of a written formal proposal from any state agency regarding any of these seven areas on BLM land.

# VISUAL RESOURCE MANAGEMENT

The visual resources have been classified using a process that considers scenic quality and visual and public sensitivity to produce a visual resource management (VRM) numerical classification. The resource area has four classes, numbered II to V. The lower the class number the more sensitive and scenic the area. Table 2-28 shows acreages of the four classes in the SLRA, and Map 2-23 shows the location of the VRM classes.

Table 2-28
VRM ACREAGE
IN SAN LUIS PLANNING AREA

| | VRM Class | BLM Acreage | Percent |
|---|---|---|---|
| II | Low visual contrast allowed | 146,370 | 28 |
| III | Moderate visual contrast allowed | 298,232 | 57 |
| IV | High visual contrast allowed | 73,700 | 14 |
| V | Rehabilitation needed | 2,375 | 1 |
| | TOTAL | 520,677 | 100 |

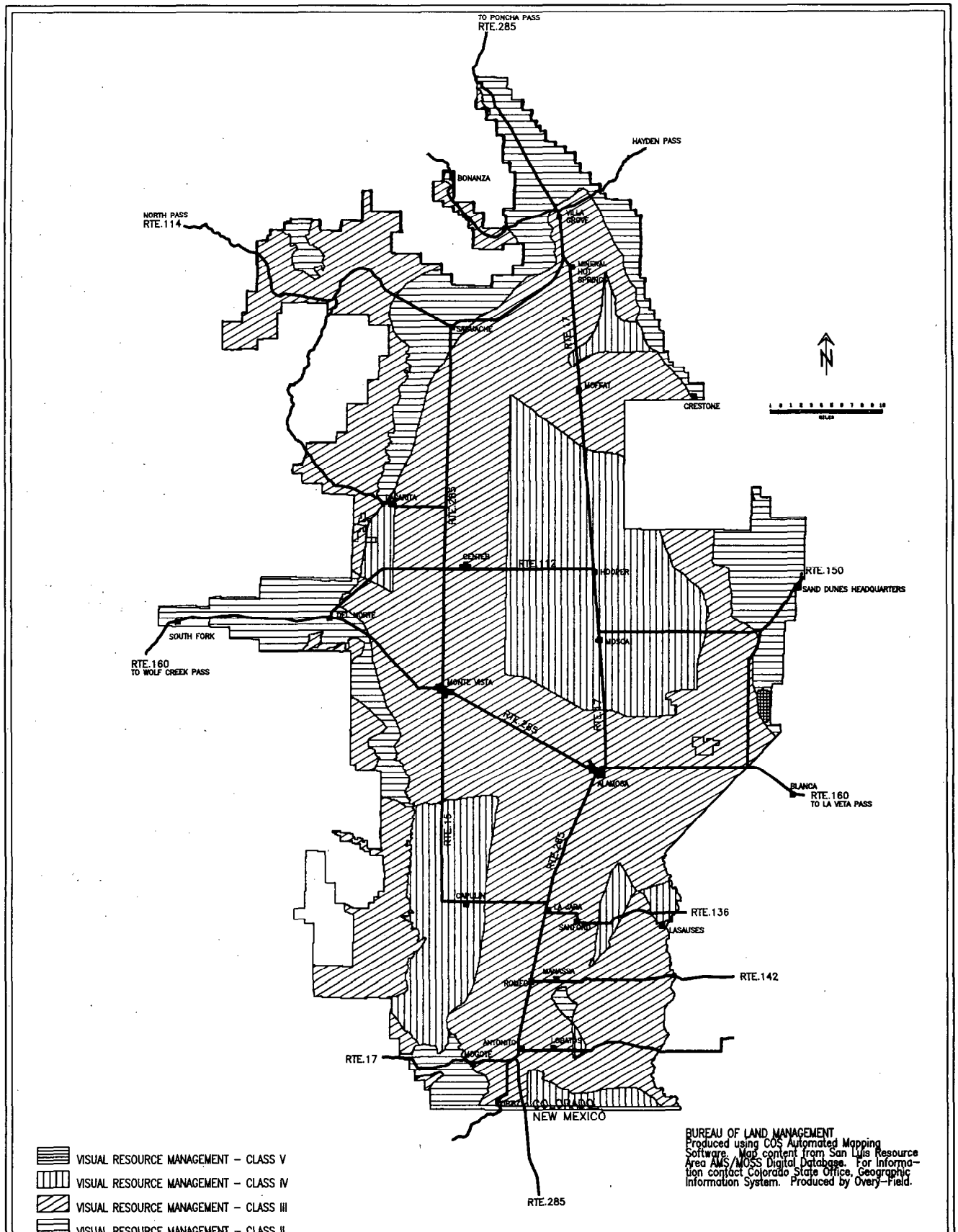
The highest value scenic resources are the Sangre de Cristo Mountains on the east, and the San Juans on the west. The quality of the scenery is one of the major resource tourist attractions in the San Luis Valley.

The Blanca chaining is classified as a class V area. Areas in this classification have had the natural character of the landscape disturbed to an extent that rehabilitation is needed to restore it to one of the four other classifications.

The trend in landscapes in the valley is gradual change from natural and pastoral towards development. Projects that have influenced landscapes include electric transmission lines, highways, pipelines, irrigation circles, mines, gravel pits, and residential development areas. Any disturbance of the viewshed is readily observable. Most of the viewshed is either BLM or USFS, and both agencies currently are concerned with the visual resource and the effect management can have on the landscape. Scenic resources are evaluated prior to approval of proposed projects significant enough to result in a visual impact. Recent policy has been to emphasize working with project proponents to reasonably mitigate visual impacts, and VRM class objectives can help decision makers determine the necessary mitigation. Details on the classification process and management objectives for each VRM class are in Appendix F.

# HISTORICAL RESOURCES

Based on several weeks of field inventory conducted in November 1975 for the San Luis Grazing EIS, and updated during the summer of 1986, there are an estimated 39 historic sites located either on BLM lands or those directly adjacent to BLM. This inventory was conducted by the BLM State




## Map 2-23
## Visual Resource Management Classes

FOR A BETTER PERSPECTIVE OF BLM OWNERSHIP, SEE THE FOLDOUT MAP AT THE BACK OF THE PLAN.

Historian and constituted a Class II (random) inventory. The recorded sites range in size and condition from an operating historic railway to abandoned cabins. There are also several significant properties listed in the National Register of Historic Places that are either on BLM lands or directly adjacent to BLM lands. These are the Cumbres and Toltec Scenic Railroad (5-CN-642), which crosses BLM land just south of Antonito, Colorado, and Pike Stockade (a National Historic Landmark) which, although owned by the state of Colorado, is directly adjacent to BLM land to the south of the site.

Of the known historic properties in the San Luis Valley that may be affected by BLM actions, five are identified as potentially eligible for inclusion in the National Register of Historic Places. These sites are: La Garita Wagon Ruts (5-SH-1065), the Poncha Pass Railline (5-SH-1063), the Villa Grove-Orient Railroad Bed (5-SH-1053), the King Turquoise Mine (5-CN-650), and the Ute Pass Road (5-SH-1066). These sites are all located on BLM lands, in whole or in part. They are in various conditions ranging from deteriorated to still being used.

There are also 13 sites on BLM identified as not being eligible for the National Register of Historic Places, either by definition or by evaluation. These sites are listed in the MSA and are generally of such a nature that they are not significant contributors to the history of the San Luis Valley. Several of these sites are cemeteries or graves, which, by regulation, do not qualify for inclusion in the National Register.

It should be noted that the above sites do not represent the full scope and size of historic resources in the San Luis Valley. Because of land and established use patterns, the center of the valley is primarily in private ownership and includes most of the historic sites. The BLM lands are on the edge of the valley and are, therefore, secondary settlement, mining, or transportation sites. Sites located on U.S. Forest Service lands, which surround the highest areas of the San Luis Valley, are generally similar to historic sites on BLM lands.

Historic sites in the San Luis Valley represent cultural values that include Spanish, and, later, Mexican occupation and settlement; modern Native American sites, such as historic locations of Ute camps; Navajo habitation shelters; and battle locations such as Kiowa Hill. This site may have ethnographic significance to tribes involved (Ute and Kiowa). These ethnographic values are important to present-day Native Americans, in particular the Ute and Navajo tribes. Sites such as camp areas, stone rings, and rock huts represent Native American historical presence in the valley. Other cultural considerations, when discussing historic properties in the San Luis Valley, include the early exploration routes and settlement patterns of Spanish settlers from New Mexico.

As early as 1696, Juan de Onate explored the valley. There were other Spanish visitors until 1821 when Mexico gained independence. During the 1840s, Mexican settlers arrived in the valley to claim land and farm. This area is the oldest continued settlement in Colorado. There are evidences of Mexican settlements dating from the 1840s, mostly along the rivers and in the center of the valley. The Spanish/Mexican culture is physically represented by farms, irrigation canals, roads, cemeteries, and religious structures such as churches. One cultural phenomenon, unique to the San Luis Valley and northern New Mexico, is the lay brotherhood known as the *penitentes*. Some former or existing buildings of worship (moradas) may be located on BLM lands. Finally, Euro-American settlement dates from the late 1850s with the arrival of American immigrants seeking gold and other minerals. This period of development is represented by mines, railroad, stage routes, and ranches. These cultural values are seen in the variety of historic sites and resources still located throughout the San Luis Valley.

# ARCHAEOLOGICAL RESOURCES

The San Luis Valley constitutes an archaeological province of major significance encompassing three major environmental and cultural categories: inter-montane, desert, and peripheral southwest. As important as the area is, however, a relatively small effort has been made towards investigation, analysis, and publication of prehistoric resources. Less than 2 percent of the planning area has been inventoried and only 2,460 archaeological sites have been assigned Smithsonian numbers by the Colorado Preservation Office. As many as 80 percent of these sites are located on BLM land; however, only 53.7 percent of those locations recorded prior to 1974 have proven to be locatable.

Existing studies, verifiable data, and collections include archaeological horizons that represent an entire span of prehistory from paleo-Indian through proto-historic and historic tribe and vary from hunting, gathering, and habitation sites to locations of religious significance. Categories of prehistoric sites and use areas include, but are not limited to:

- Quarry
- Lithic processing
- Mining—turquoise, red ochre, clay
- Hunting blinds
- Game surrounds
- Game drives
- Game jumps
- Kill stations
- Surface structures
- Miscellaneous rock alignments
- Rock shelters
- Caves
- Eagle traps
- Vision quests
- River fords
- Trails

| | |
|---|---|
| Butcher and processing | Interments |
| Miscellaneous food processing | Battle sites |
| | Tipi rings |
| Isolated hearths | Rock art |
| Open camp areas | Aspen art |
| Pit houses and semi-subterranean | Isolated artifacts |
| | Sacred and ceremonial areas |

Carnero Creek Rock Art constitutes the only prehistoric location currently listed on the National Register of Historic Places and is privately owned. There are properties (e.g., Cattleguard Folsom Site), however, that very likely qualify for inclusion.

Current native American tradition and religious interest may involve Blanca Peak and Pole Mountain, administered by the USFS, and the general area of the King Turquoise Mine on land administered by the BLM.

# FIRE MANAGEMENT

BLM is responsible for protecting public resources from fire and for suppressing wildfires on BLM lands. There are basically only two protection objectives and they are: (1) Protect human life and (2) extinguish the fire with minimum suppression cost plus resource losses (damages) consistent with management objectives. Protection objective (2) is covered in the District Fire Management Plan, which basically discusses two levels of suppression objectives for the San Luis Resource Area. These are:

Conditional Suppression—In these areas fire(s) will be suppressed by utilizing cost effective methods; e.g., reduced response/arrival time of suppression unit(s), utilization of natural fire breaks whenever possible, etc.

Full Suppression—These areas are normally identified by management for complete and immediate suppression. Such areas may be high value timber stands, scenic areas, certain rare and endangered wildlife habitat areas, etc.

Between 1975 and 1986, 14 fires occurred in the the San Luis Resource Area. Sixty-four percent of the fires occurred between Saguache and Poncha Pass.

Average acres burned per year are less than 1.3 acres. Man-caused fires accounted for 25 percent of the total, and 64 percent of the fires were caused by lightning. Unknown causes account for the remaining 11 percent.

Because of the normal weather conditions, elevation, fuel types, fuel moisture, and many other factors, the San Luis Valley has never been and will probably never be a high fire occurrence area.

BLM has entered into a memorandum of understanding with the USFS to provide both initial attack and suppression for wild fire protection in the San Luis Resource Area. This agreement reduces both manpower and equipment and furnishes cost-effective suppression in a very minimal occurrence area.

# ECONOMIC CONDITIONS AND SOCIAL ENVIRONMENT

The affected area of the economic analysis is limited to Alamosa, Conejos, Rio Grande, Costilla, and Saguache Counties. Since economic data is available only in county units, this analysis is defined in terms of these counties.

The population of the five-county economic study area (ESA) consists of Alamosa, Conejos, Rio Grande, Costilla, and Saguache Counties. The total population for the area, over a 15-year period, has increased about 6.8 percent. Alamosa and Rio Grande Counties experienced the largest increases in population. Alamosa County has the largest population of the five counties in the ESA. (See Table 2-29.)

One of the most significant social-economic characteristics of the ESA is the large Spanish speaking and Spanish surname population. This represents 45 percent of the total population in the ESA. On the other hand, the state of Colorado shows only 17 percent Spanish population.

The San Luis Valley Regional Development and Planning Commission has determined the population growth projection for the Region has generally been unreliable (Region 8 Overall Economic Development Plan, 1984). Only in Alamosa County is any population gain predicted over the 1985 to 2010 period. Over all, for the ESA, the population is projected to decrease by 2 percent.

Employment in the three sectors of retail trade, services, and government make up over 55 percent of the ESA employment. The farming sector employs 16 percent of the ESA labor force. The largest area of employment, 21 percent, is in the service sector. The second largest area of employment is the government sector with 19 percent (see Table 2-30). The manufacturing sector of the ESA only employs 3 percent of the workforce. Mining employment appears to be zero at the present for the area.

In considering the individual counties, a different pattern emerges. In Conejos County, for example, 32 percent of its labor force relates to farming. Farming is also the largest source of employment for Saguache County with 27 percent. Employment in agriculture and government accounts for 51 percent of county employment in Saguache.

Table 2-29
POPULATION BY COUNTY
1970 Through 2010

| | 1970 | 1975 | 1980 | 1985 | Percent Change (1970 -1985) | 1990 | 1995 | 2000 | 2005 | 2010 | Percent Change (1985 -2010) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Alamosa County | 11,484 | 11,658 | 11,852 | 12,496 | 8.8 | 13,043 | 13,458 | 13,801 | 14,166 | 14,560 | 16.5 |
| Conejos County | 7,829 | 8,034 | 7,786 | 7,992 | 2.1 | 7,848 | 7,637 | 7,347 | 7,023 | 6,677 | -16.5 |
| Costilla | 3,058 | 3,108 | 3,069 | 3,371 | 10.2 | 3,210 | 3,007 | 2,759 | 2,484 | 2,189 | -35.1 |
| Rio Grande County | 10,453 | 10,795 | 10,576 | 11,456 | 9.6 | 11,548 | 11,540 | 11,465 | 11,396 | 11,344 | -1.0 |
| Saguache County | 3,833 | 4,098 | 3,947 | 3,946 | 2.9 | 3,729 | 3,452 | 3,134 | 2,809 | 2,475 | -37.3 |
| TOTAL ECONOMIC STUDY AREA | 36,657 | 37,693 | 37,230 | 39,261 | 7.1 | 39,378 | 39,094 | 38,506 | 37,878 | 37,245 | 5.1 |

Source: Colorado Division of Local Government, Demography Section

Alamosa employs over 66 percent in retail trade, service, and government; 9 percent of the labor force is in farming. The top three employers for Rio Grande County are the service sector with 20 percent, the government sector with 16 percent, and the farming sector with 15 percent of the employment in the county.

The unemployment rate for the ESA has averaged higher rates than the state has experienced. These rates are also high when compared to the United States rate. For example, the unemployment rate for September 1987 was 10.4 percent for Alamosa, 21.3 percent for Conejos, 23.4 percent for Rio Grande, and 21.5 percent for Saguache. However, the average unemployment for the state for the same period was 8.2 percent.

Income statistics mirror the employment statistics (see Table G-1 in the appendix). Retail trade, service, and government are the largest contributors to the labor income (see Table G-2 in the appendix). Farm proprietors' income appears erratic over the 3-year period for Saguache County but is a large part of the income in the county.

Table 2-31 represents data on the source of revenues and expenditures in the ESA counties. Alamosa and Rio Grande Counties have the largest revenues and expenditures. Alamosa County has the largest expenditures for public safety, public works, and public health.

The lifestyles within the ESA are varied. In Saguache County, lifestyle is centered around the farming and ranching economy. Most of the ranches are family owned and operated. The large towns of Alamosa, in Alamosa County, and Del Norte and Monte Vista in Rio Grande County provide retail trade and support services for the surrounding smaller communities and rural areas in the ESA. Alamosa, an academic community associated with Adams State College, offers the community additional cultural activities. The rural areas support a ranching and farming lifestyle with rodeos, 4-H clubs, Boy Scouts, and riding clubs.

# TABLE 2-30
# EMPLOYMENT AND LABOR FORCE BY COUNTY

| | Alamosa County | | | Conejos County | | | Costilla County | | | Rio Grande County | | | Saguache County | | | ESA | ESA | ESA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1982 | 1983 | 1984 | 1982 | 1983 | 1984 | 1982 | 1983 | 1984 | 1982 | 1983 | 1984 | 1982 | 1983 | 1984 | 1982 | 1983 | 1984 |
| Mining | - | - | - | - | - | - | - | - 11 | - | - | - | - | - | 11 | - | - | | |
| Construction | 361 | 366 | 392 | 72 | 73 | 76 | 43 | 45 | 46 | 253 | 231 | 255 | - | 73 | 84 | 729 | 788 | 853 |
| Manufacturing | 165 | 151 | 89 | 141 | 98 | 86 | - | - | - | 365 | 337 | 292 | 21 | 22 | 26 | 692 | 608 | 493 |
| Transportation | 345 | 298 | 272 | 67 | 66 | 75 | 12 | 11 | 12 | 189 | 195 | 198 | 33 | 33 | 34 | 646 | 603 | 591 |
| Wholesale Trade | 221 | 239 | 309 | 37 | 35 | 33 | 21 | 23 | 27 | 365 | 337 | 366 | 86 | 84 | 67 | 730 | 718 | 802 |
| Retail Trade | 1,286 | 1,265 | 1,309 | 175 | 181 | 183 | 87 | 88 | 85 | 746 | 742 | 700 | 154 | 144 | 146 | 2,448 | 2,420 | 2,423 |
| Finance, Insurance, Real Estate | 474 | 569 | 386 | 56 | 56 | 66 | 50 | 53 | 59 | 286 | 297 | 309 | - | 92 | 70 | 866 | 1,067 | 890 |
| Services | 1,531 | 1,588 | 1,669 | 380 | 386 | 395 | - | - | - | 1,002 | 1,024 | 1,043 | 166 | 175 | 202 | 3,079 | 3,173 | 3,309 |
| Government | 1,213 | 1,221 | 1,203 | 484 | 499 | 506 | 263 | 277 | 276 | 842 | 840 | 832 | 389 | 392 | 378 | 3,191 | 3,229 | 3,195 |
| Misc. Agricultural Svcs. | - | - | - | - | - | - | - | - | - | 338 | - | - | - | 112 | - | 338 | 112 | - |
| TOTAL NONFARMING | 5,728 | 5,823 | 5,763 | 1,646 | 1,640 | 1,670 | 597 | 628 | 673 | 4,397 | 4,332 | 4,440 | 1,180 | 1,133 | 1,154 | 13,548 | 13,556 | 13,700 |
| Farming | 583 | 564 | 554 | 815 | 785 | 768 | 829 | 272 | 262 | 257 | 794 | 772 | 462 | 444 | 434 | 2,961 | 2,849 | 2,785 |
| Not Classified Elsewhere | 132 | 126 | 134 | 234 | 246 | 250 | 121 | 131 | 168 | - | 329 | 445 | 331 | 6 | 147 | 818 | 838 | 1,144 |
| TOTAL EMPLOYMENT BY PLACE OF WORK | 6,311 | 6,387 | 6,317 | 2,461 | 2,425 | 2,438 | 869 | 890 | 930 | 5,226 | 5,126 | 5,212 | 1,642 | 1,577 | 1,588 | 16,509 | 16,405 | 16,485 |
| COUNTY LABOR FORCE | | | | | | | | | | | | | | | | | | |
| Employment | 5,671 | 5,411 | 5,428 | 2,306 | 2,175 | 2,159 | 802 | 806 | 803 | 5,086 | 4,479 | 4,386 | 1,926 | 1,456 | 1,452 | 15,791 | 14,327 | 14,228 |
| Unemployment | 568 | 421 | 497 | 573 | 476 | 460 | 224 | 183 | 186 | 522 | 527 | 499 | 263 | 279 | 229 | 2,150 | 1,886 | 1,871 |
| TOTAL LABOR FORCE BY PLACE OF RESIDENCE | 6,239 | 5,832 | 5,925 | 2,879 | 2,651 | 2,619 | 1,026 | 989 | 989 | 5,608 | 5,006 | 4,885 | 2,189 | 1,735 | 1,681 | 17,941 | 16,213 | 16,099 |

Source: Bureau of Economic Analysis

Table 2-31
COUNTY REVENUES AND EXPENDITURES FOR 1984
(In Thousands)

| Total | Alamosa | Conejos | Costilla | Rio Grande | Saguache |
|---|---|---|---|---|---|
| Revenue | 6,155 | 3,774 | 3,280 | 4,753 | 3,263 |
| Taxes | 2,389 | 492 | 701 | 1,232 | 521 |
| Licenses & Permits | 6 | 1 | 5 | 13 | 2 |
| Charges for Services | 351 | 116 | 116 | 141 | 220 |
| Fines & Forfeits | 2 | 0 | 0 | 4 | 0 |
| Miscellaneous | 388 | 158 | 96 | 466 | 90 |
| Intergovernmental | 3,018 | 3,005 | 2,367 | 2,894 | 2,428 |
| Operating Expenditures | 4,779 | 3,541 | 2,654 | 3,498 | 2,691 |
| General Government | 785 | 501 | 586 | 578 | 495 |
| Public Safety | 457 | 209 | 10 | 292 | 223 |
| Public Works | 940 | 646 | 754 | 488 | 950 |
| Health | 290 | 186 | 109 | 99 | 165 |
| Culture & Recreation | 84 | 80 | 68 | 65 | 64 |
| Miscellaneous | 91 | 127 | 11 | 4 | 18 |
| Capital Outlay | 469 | 210 | 895 | 862 | 102 |
| Debt Service | 579 | 0 | 0 | 0 | 0 |
| Transfer Out | 71 | 0 | 7 | 61 | 2 |

Source: Colorado Division of Local Government

## Economic Sectors Related to Resource Management

**Agriculture:** The local livestock industry is influenced by the grazing management program, which is outlined in the grazing environmental impact statement completed in 1978.

**Manufacturing/Forestry:** Only small amounts of sawtimber currently come from the San Luis Planning Area forest lands.

**Retail Trade and Service/Tourism:** Retail trade and service are the largest economic sectors in the economic study area (ESA) providing employment to over one-third of the ESA workforce. Most of this employment is in Alamosa County. Table 2-32 presents information on tourism in ESA counties. Tourism in Alamosa County accounted for 9 percent of the jobs, in Conejos 4 percent of the jobs, in Rio Grande 8 percent of the jobs, in Saguache 5 percent of the jobs, and in Costilla 3 percent of the jobs.

**Government/BLM Budget Management Costs:** Table 2-33 provides information on the BLM budget in the San Luis Valley Resource Area and a general breakdown of budgeted items. The split between labor and expenditures for operation and maintenance is about 75 percent for labor and 25 percent for other.

The fiscal year 1987 budget for the San Luis Valley Resource Area was about $341,000. Amounts in the table do consider funding support from the district office in Canon City.

Table 2-32
IMPACT OF TRAVEL ON ESA COUNTIES, 1984
U.S. TRAVEL DATA CENTER
COUNTY TRAVEL ECONOMIC IMPACT MODEL (CTEIM)

| ESA County | Total Travel Expenditures (000) | Travel Generated Payroll (000) | Travel Generated Employment (Jobs) | State Tax Receipts (000) | Local Tax Receipts (000) |
|---|---|---|---|---|---|
| Alamosa | 20,158 | 4,540 | 568 | 728 | 564 |
| Conejos | 3,144 | 695 | 87 | 108 | 25 |
| Costilla | 1,142 | 234 | 28 | 1 | 0 |
| Rio Grande | 15,030 | 3,322 | 414 | 535 | 220 |
| Saguache | 3,181 | 684 | 84 | 104 | 25 |

Table 2-33
SAN LUIS RESOURCE AREA BLM BUDGET

| Budget Item | Dollars |
|---|---|
| Minerals | 87,373 |
| Lands | 33,911 |
| Forest Management | 20,331 |
| Range Management | 182,400 |
| Recreation Management | 2,129 |
| Soil & Water | 73,623 |
| Wildlife | 107,817 |
| Maintenance and Engineering | 5,119 |
| Range Improvements | 23,156 |
| Other | 113,014 |
| Total | 648,873 |

# HAZARDS MANAGEMENT

Table 2-34 lists the hazardous areas (locations of public safety concern) identified within the planning area. Hazard areas identified in the SLRMP are manmade hazards and not the natural phenomena of the land. These areas include active mining areas, inactive mining areas, and unauthorized dump sites.

Table 2-34
HAZARDOUS ZONES WITHIN THE SAN LUIS PLANNING AREA

| Type of Hazard | Number of Sites Recorded |
|---|---|
| Active Mining Areas | 1 |
| Inactive Mining Areas | 282 |
| Unauthorized Dump Sites | 8 |

The degree of hazard varies from area to area; a more detailed inventory is needed to determine the nature of these hazards (content, size, value, toxicity, etc.).

In most cases, signs have been posted in and around unauthorized dump sites to discourage illegal dumping activities. Illegal dumping, however, has continued within the planning area in four different sites and has had a significant impact on the environment. Unauthorized dumping appears to be on the increase, primarily because many authorized landfills are inconvenient to use and dumping fees are required on some.

Other sites in the planning area are abandoned mine shafts and tunnels; however, many of these sites have been identified by the Colorado Mined Land Reclamation Board, and they have provided barriers and posted signs warning of the existing hazards in these areas. Other areas with surface disturbance need further evaluation to determine reclamation needs.

# SPECIAL STATUS PLANT AND ANIMAL SPECIES

The *Federal Endangered Species Act* protects both plants and animals that are listed threatened, endangered, or candidate species, as well as the ecosystem on which they depend. Their existence is not to be jeopardized by any Federal action, and Federal agencies are directed by the act to take any actions within their authority to improve the security of these listed species. Plant and animal species (sensitive species) listed and protected by other Federal and state laws and policies also must not be jeopardized by any Federal action. Whenever the inhabited location or potential habitat of special plant or animal species (threatened, endangered, candidate, or sensitive species) may be disturbed by any Federal action, special attention is given to designation, avoidance, or development of mitigation and protective measures. The Bureau policy and objective is to manage and/or conserve all known special plant and animal species not yet listed as threatened or endangered to minimize the need for listing those species by either Federal or state governments in the future. Consultation and coordination with the U.S. Fish and Wildlife Service (FWS), the Colorado Division of Wildlife (DOW), and the Colorado Natural Areas Program (CNAP) will continue on management and inventory of the special plants and animals.

## Special Status Plant Species

One plant species identified as threatened or endangered on Federal or state lists occurs within the planning area. Some species, considered to be candidate or sensitive, do occur in the area and without proper management may become listed as threatened or endangered. Species in Table 2-35 were obtained from data provided by CNAP (also refer to Map 2-24). Other species reported by CNAP to occur in the planning area, but not recently sighted in their field inventories, are also shown. All information concerning special plants is contained in the formal report from CNAP entitled, "Floristic Reconnaissance of the San Luis Valley." In addition, there are a number of federally listed candidate or sensitive species known to occur in the general region, but not reported within the planning area.

Sensitive plant associations and other sensitive floristic communities considered by CNAP to be unique exist in the planning area. Table 2-36 lists these plant associations and the other sensitive floristic communities that constitute the special vegetation types of the planning area. (Also see Map 2-24). CNAP, BLM, and the SCS are currently correlating these plant associations into the ecological site naming and description format. These areas are relatively undisturbed vegetation sites and provide valuable information in describing potential natural communities (PNC) for similar ecological sites. These areas will be protected and made available to anyone for further research and educational opportunities.

## Special Status Animal Species

Nine animal species are listed as threatened, endangered, or candidate and are known to occur within the planning area These species are listed in Table 2-37 and on Map 2-25. The black-footed ferret *Mustela nigripes*, a Federal and state endangered species, may occur on BLM land within the planning area, but no sightings have been documented by recent studies conducted by BLM. Prairie dog towns on BLM land most likely to be black-footed ferret habitat have been identified. Of the nine species listed, only the whooping crane has officially designated critical habitat within the planning area. No designated critical habitat is on BLM administered lands.

The endangered bald eagle is a common winter resident of the planning area and population peaks of 300 have been documented. The valley is considered one of the more important winter concentration areas in Colorado. Primary habitat areas on BLM lands include 17 miles of the Rio Grande River Corridor associated riparian areas (which includes the proposed 8.8-mile segment of the wild and scenic proposal), Blanca Wildlife Habitat Area, and the Greenie Mountain Roost Area (200 acres).

Trend for endangered species habitat on BLM lands is presented in Table 2-38.

# Table 2-35
# SPECIAL STATUS PLANT SPECIES
# ENDANGERED, THREATENED, CANDIDATE, OR SENSITIVE PLANT SPECIES
# REPORTED TO OCCUR WITHIN THE PLANNING AREA

| Common Name | Scientific Name | Status CNAP [1] | Status Federal [2] | Habitat | Estimated Population [3] | Estimated Acres of Habitat [3] |
|---|---|---|---|---|---|---|
| | | Reported Species Recently Verified | | | | |
| Ripley milkvetch | Astragalus ripleyi | 1 | LT | Canyon slopes and bottoms; gravelly soil. | 229 | 54 |
| Many-stemmed spider-flower | Cleome multicaulis | 1 | 2 [4] | Edge of small lakes; Heavy wet soils. | 2,025 | 2 |
| Rockloving neoparrya | Neoparrya lithophila | 1 | 2 [4] | Rocks, rock-cracks shallow rocky soil. | 12,800 | 255 |
| | | Other Reported Species Not Verified With Sighting | | | | |
| Brandegee milkvetch | Astragalus brandegei | 2 | — | - - - - - - | - - - | - - - |
| Altai cottongrass | Eriophorum altaicum var. neogaeum | 2 | — | - - - - - - | - - - | - - - |
| Intermountain bitterweed | Hymenoxys helenioides | 3 | 2 [4] | - - - - - - | - - - | - - - |
| Colorado watercress | Rorippa coloradensis | 1* | 2*[4] | - - - - - - | - - - | - - - |
| Rocky Mountain spikemoss | Selaginella weatherbiana | 3 | — | - - - - - - | - - - | - - - |

[1] These rankings are provided by the Colorado Department of Natural Resources, Natural Areas Program. This standardized ranking procedure was developed for use in 41 heritage programs throughout the United States was used to determine status.

List 1. Plants rare in Colorado and elsewhere.

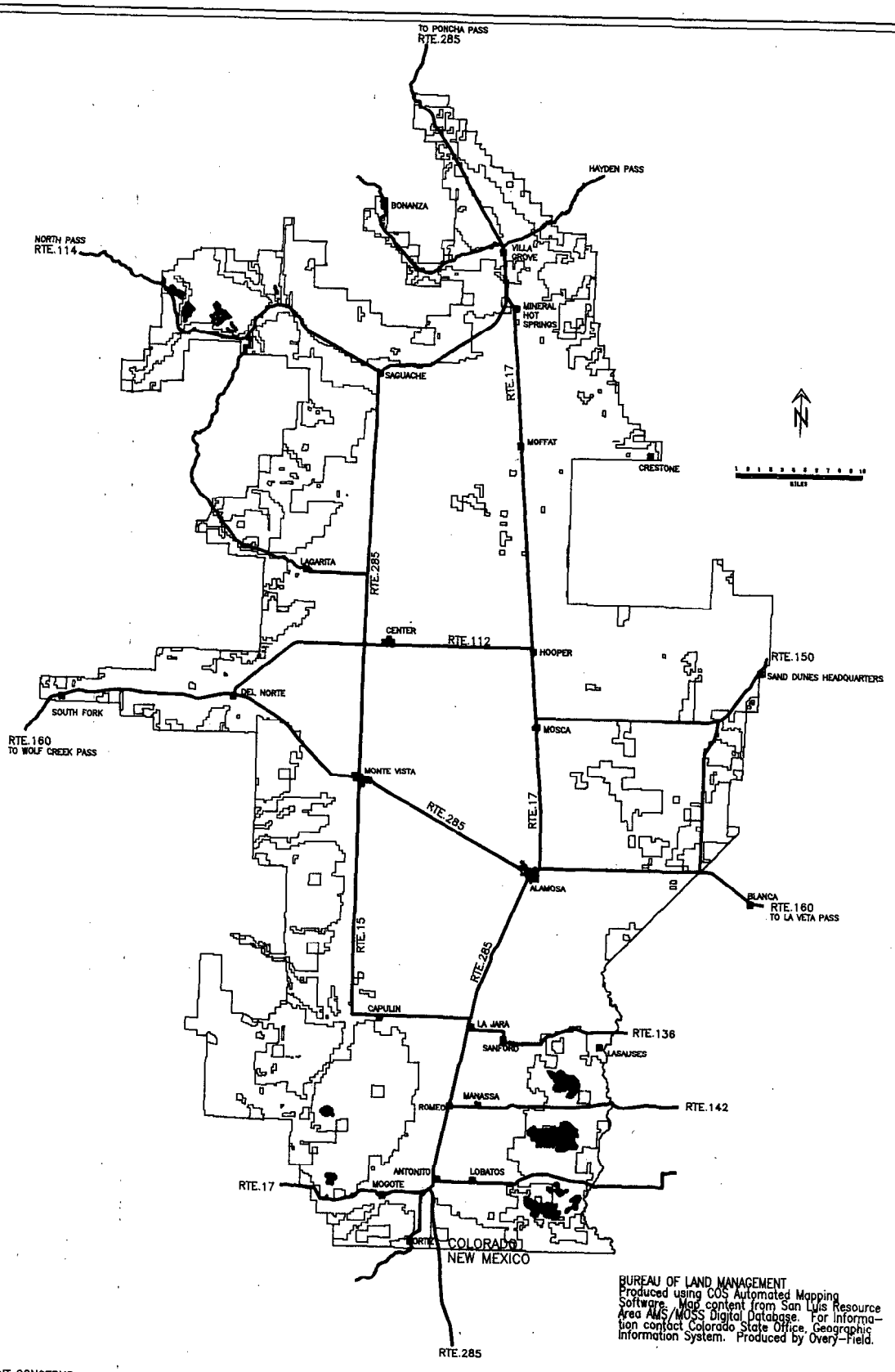
List 1*. Plants presumed extinct.
List 2. Plants rare in Colorado but move common across their range.
List 2*. Plants presumed extirpated from Colorado.
List 3. Plants about which more information is needed.
List 4. Plants of limited distribution (watch list).

[2] The symbols utilized in the Federal status column (Table 2.23-1) reflect the categories defined in the U.S. Fish and Wildlife Service Notice of Review (Federal Register 1985) for those plant taxa that are Federally listed in accordance with the Endangered Species Act of 1973 and its amendments:

| | | | |
|---|---|---|---|
| LE | Listed, Endangered | 1 | Notice of Review, Category 1 |
| LT | Listed, Threatened | 2 | Notice of Review, Category 2 |
| PE | Proposed Endangered | 2* | Notice of Review, Possibly Extinct |
| PT | Proposed Threatened | 3C | Notice of Review, Category 3C |

[3] Estimated populations and acres of habitat are on BLM land only.

[4] Listing as endangered or threatened would possibly be appropriate with further study.




FOR A BETTER PERSPECTIVE OF BLM OWNERSHIP, SEE THE FOLDOUT MAP AT THE BACK OF THE PLAN.

## Map 2-24
## Special Status Plant Concerns

## Table 2-36
## SPECIAL STATUS VEGETATION RESOURCES IN THE PLANNING AREA

| Special Vegetation Resources | Status/Ranking [1] |
|---|---|
| Sensitive Floristic Communities [2] | |
| Flat Top Mesa | Recommended |
| Grande Mogote Peaks | Recommended |
| Little Mogote Mesa | Recommended |
| South Pinon Hills | Recommended |
| Pinon Hills | Recommended |
| Sensitive Plant Association | |
| PIPO-(PSME)/FEAR1-MUMO1 | Approved G3S2 |
| PIAR-(PIPO)-PSME/FEAR1-MUMO1 | Approved G2S2 |
| MUFI1 | Approved G2S2 |
| FEAR1-MUFI1 | Approved GUSU |
| FEAR1-MUMO1-CELA-ORHY | Approved G3S2<br>Approved GUSU |

[1] These rankings are provided by the Colorado Department of Natural Resources, Colorado Natural Areas Program (CNAP). A standardized ranking process developed for use in 41 heritage programs throughout the United States was used to determine status. Recommendation of Sensitive Floristic Communities was made during a field survey and in a final report by CNAP on 02-13-86, "Floristic Reconnaissance of the San Luis Valley."
[2] Listing as Sensitive Plant Association would possibly be appropriate with more study. Exact plant association taxonomy currently undetermined and/or not described.

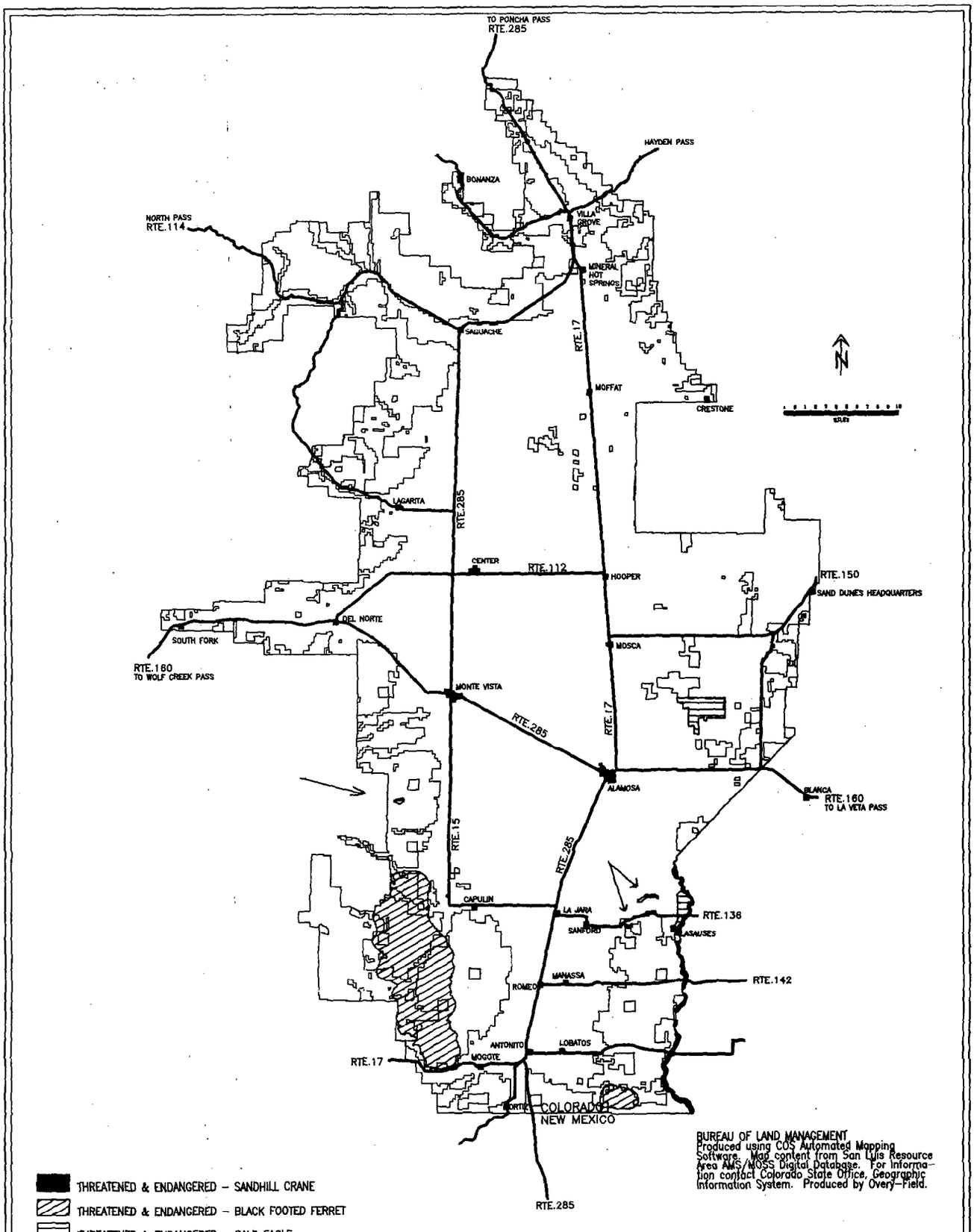
## Table 2-38
## ENDANGERED SPECIES AND HABITAT TREND

| Species | Population | Habitat | Remarks |
|---|---|---|---|
| Black-footed ferret | ? | Declining | A food source (Gunnison prairie dogs) have notably declined in the past decade because of plague |
| Bald eagle | Stable | Declining | Decline of suitable roost trees and hunting perches on the valley floor |

## Table 2-37
## ENDANGERED, THREATENED, AND CANDIDATE ANIMAL SPECIES KNOWN TO OCCUR WITHIN THE PLANNING AREA

| Common Name | Scientific Name | Federal Status | State Status | Comments |
|---|---|---|---|---|
| Bald eagle | Haliaeetus leucocephalus | E [1] | E | Common winter resident |
| Peregrine falcon | Falco peregrinus | E | E | Rare yearlong resident |
| Whooping crane | Grus americana | E | E | Rare spring & fall migrant |
| Feruginous hawk | Buteo regalis | C [2] | - | Rare yearlong resident |
| Swainson's hawk | Buteo swaninsoni | C | - | Summer resident |
| White-faced ibis | Plegadis chihi | C | - | Uncommon summer resident |
| Snowy plover | Charadrius alexandrinus | C | - | Uncommon summer resident |
| Long-billed curlew | Numenius americanus | C | - | Rare migrant |
| Mountain plover | Eupoda montana | C | - | Rare summer resident |

[1] E = Endangered
[2] C = Candidate




## Map 2-25
## Threatened and Endangered Species Habitat

FOR A BETTER PERSPECTIVE OF BLM OWNERSHIP, SEE THE FOLDOUT MAP AT THE BACK OF THE PLAN.

CHAPTER 2

# WATERPOWER/STORAGE

Quality potential reservoir and waterpower sites are limited in number, fixed in position, increasingly scarce, and irreplaceable. Reservoir sites are constructed to provide the operator with control of the distribution of the flows in a stream. This control of the distribution is valuable to meet needs or demands for flows for agriculture, fisheries, flood control, hydroelectric power generation, industry, irrigation, municipal water, navigation, quality of water, recreation, shoreline protection, and wildlife.

Potential water reservoir sites may or may not also have hydroelectric generation potential (waterpower). The hydroelectric value is a function of demand and need, but generally the value has been recognized and given a high priority by Congress.

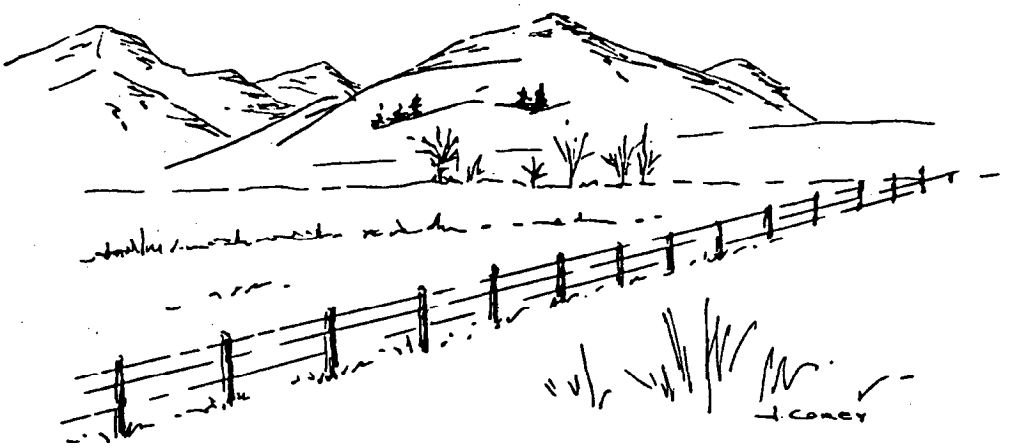
Congress authorized the withdrawal of sites to formally point out the existence of potential sites and to ensure consideration of these sites. This is a form of long-range planning and gives land managers the opportunity to recognize the sites and to maintain the availability for construction if and when they would be needed.

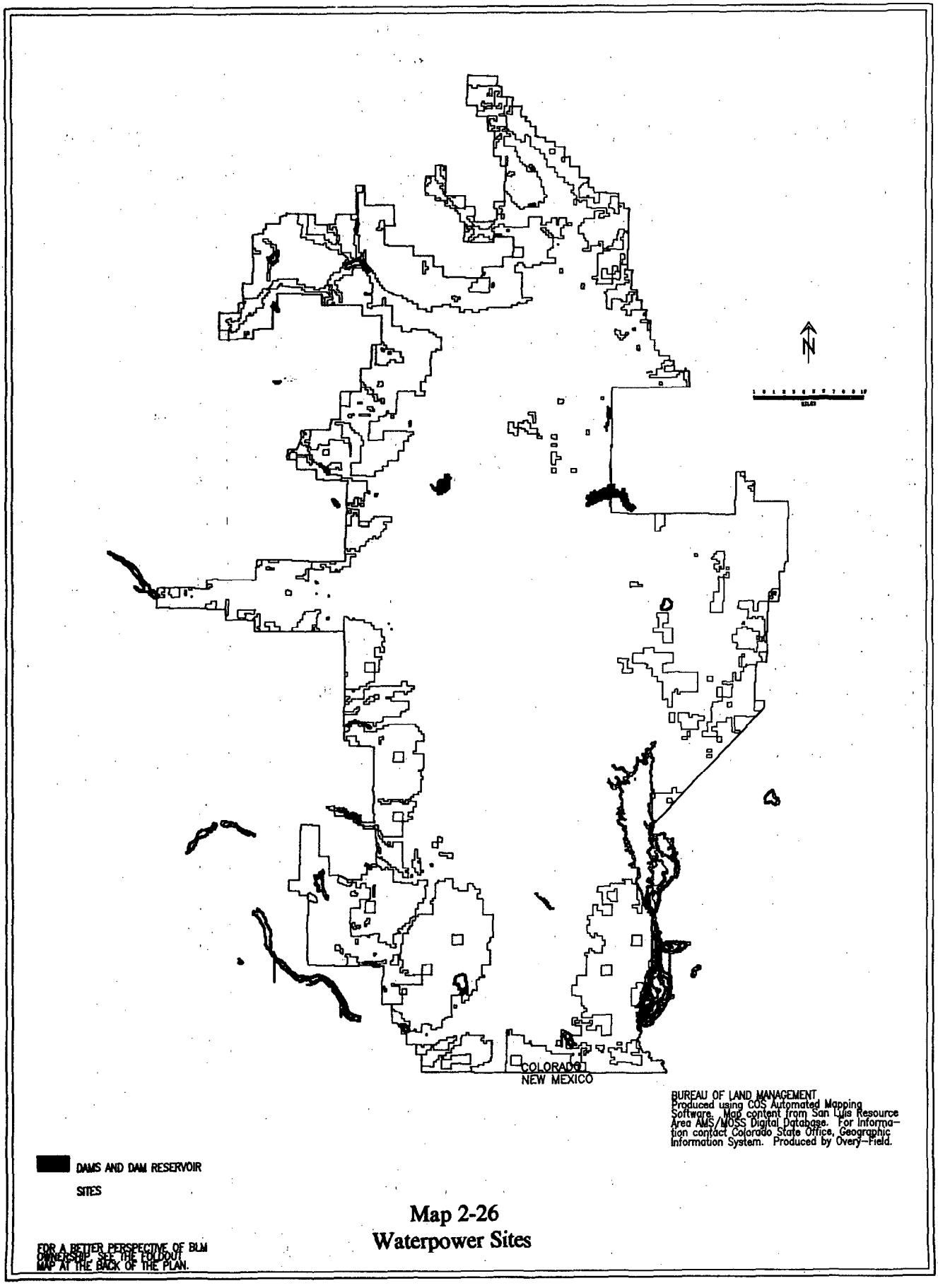
In this planning area, there are developed and undeveloped reservoir and waterpower sites. The sites displayed in this plan have been previously identified and may not reflect all the possible sites. They are shown as an indication of previous interest and as a guide for the location of possible resources. The sites are shown on Map 2-26.

The most significant potential on BLM land in this planning area is for a reservoir site on the Rio Grande River, near the New Mexico State line. This potential was recognized and investigated in the early part of this century and the land has been withdrawn for that purpose; however, there has never been a specific proposed dam site in the river corridor. In this planning area, the withdrawals were made under the authority of the act of March 3, 1879 (classifications). Generally any interim use of the land is permitted; however, the determination of that use is the responsibility of the Federal Energy Regulatory Commission (FERC).

In the planning area, there may be withdrawals to protect the interest of developers of reservoirs or waterpower sites. These are generally much more restrictive concerning other possible uses of the land in the withdrawal. They consist of withdrawals for Federal agencies such as the Bureau of Reclamation or the Corps of Engineers, and are made under the authority Congress gave to the agency. The withdrawals for Federal agencies are usually coordinated with the management agency. Other withdrawals for the protection of non-Federal or private development agencies are made by application to FERC for permits to investigate or license to construct projects. These withdrawals are automatic under the provisions of the *Federal Power Act of 1920.* For more information on the withdrawals see Chapter 2, Lands and Realty Management and Appendix I.

Congress made the decision that wild and scenic rivers integrated into a national system would be incompatible with potential reservoir sites. This is clear by the wording in the act passed on October 2, 1968, and the subsequent amendments.






**Map 2-26**
**Waterpower Sites**

# CHAPTER 3

# MANAGEMENT ALTERNATIVES

# CHAPTER 3

# MANAGEMENT ALTERNATIVES

Four land use management alternatives were developed for the BLM lands in the San Luis Planning Area: Existing Management Alternative, Natural Resource Enhancement Alternative, Resource Production Enhancement Alternative, and Preferred Alternative. Each of these alternatives describes a logical, realistic, and achievable mix of multiple use management actions and land use allocations that can be followed by BLM within the planning area. It is assumed, therefore, that all the alternatives can be fully and completely executed within the 15- to 20-year life of the plan.

Under the Existing Management Alternative (no action), multiple use management would continue in much the same manner as currently exists. Policies and decisions in existing land use plans would continue to be implemented. In addition, new policy directions would be followed. Some examples of these new directions are: assessing and managing for wilderness values, riparian resources, wild and scenic river values, areas of critical environmental concern, and utility corridors.

Management under the Natural Resource Enhancement Alternative would focus on enhancement or conservation/ protection of the natural resources (i.e., sensitive or unique resources or values). To facilitate analysis of this plan alternative, the resources and resource uses to be enhanced are ranked to provide guidance for the enhancement or conservation of the natural resources over the production/ consumption of these resources. The ranking, however, does not indicate exclusive use. Only when the enhancement of natural resources is incompatible is the ranking utilized. This allows for a clearer focus on the multiple use opportunities available within this alternative.

In contrast, management under the Resource Production Enhancement Alternative would focus on consumption and production (e.g., timber, recreation, minerals, and grazing). To facilitate analysis of this plan alternative, the resources and resource uses to be enhanced are ranked to provide guidance for the production/consumption of these resources. The ranking, however, does not indicate exclusive use. Only when the enhancement of the production/consumption resources is incompatible is the ranking utilized. This allows for a clearer focus on the multiple use opportunities available within this alternative.

The Preferred Alternative would provide guidance for a balanced or highly compatible mix of multiple use opportunities within this plan alternative. No ranking is utilized here because both the enhancement and conservation of the natural resources and the production and consumption of the same resources are considered in this alternative. Stringent measures of mitigation would be implemented, however, to protect and conserve the sensitive resources while still accommodating production enhancement. Special enhancement measures would be taken for the key resources in this alternative; i.e., wildlife values and recreation resources. Where conflicts do occur between the measures to enhance production and measures to enhance these key resources, a maximum effort would be made to achieve as much compatibility as possible prior to restricting the production measures.

Table 3-1 lists the activity plans that would be needed for each alternative.

## MANAGEMENT GUIDANCE COMMON TO ALL ALTERNATIVES

The resource and resource uses discussed in this section are common to all four alternatives. Common, for purposes of this analysis in this plan/EIS, means that they are either not significantly affected by the actions described or are insignificantly affected the same in all alternatives. Although these resources and resource uses for the most part are not carried into the impacts analysis in chapter 4, they are of concern to the Bureau and are discussed in this section.

In most cases, the common measures described for these resources and resource uses reflect Bureau policies and regulatory mandates and, therefore, would be the same in each of the four alternatives addressed in the plan. Some resources and resource uses may be partially discussed both in this chapter and in chapter 4, if only portions of a resource or resource use are considered common to all four alternatives.

### Climate

Climatic variability throughout the planning area, and over time, affects the management options for several resources.

# Table 3-1
# REQUIRED ACTIVITY PLANS

| Activity | Existing Management | Alternatives: Natural Resource Enhancement | Alternatives: Resource Production Enhancement | Preferred |
|---|---|---|---|---|
| Fluid Minerals | No | No | No | No |
| Locatable Minerals | No | No | No | No |
| Mineral Materials | Yes | Yes | Yes | Yes [1] |
| Paleontology | No | Yes | No | Yes [2] |
| Riparian Resources | Yes | Yes | Yes | Yes [3] |
| Livestock Grazing Mgmt. | Yes | Yes | Yes | Yes [4] |
| Wildlife Habitat Mgmt. | Yes | Yes | Yes | Yes [5] |
| Forest & Woodlands Mgmt. | Yes | Yes | Yes | Yes [6] |
| Lands & Realty Mgmt. | Yes | Yes | Yes | Yes [7] |
| Areas of Special Concern | Yes | Yes | No | Yes [8] |
| Access & Transportation | Yes | Yes | Yes | Yes [9] |
| Historical & Arch. Res. | Yes | Yes | No | Yes [10] |
| Recreation | Yes | Yes | Yes | Yes [11] |
| Support Svcs. Mgmt. Plan | Yes | Yes | Yes | Yes |

[1] An area-wide materials plan to locate and establish community pits, etc.

[2] An area-wide surface-disturbance and development plan and a site-specific plan for the public paleo use/ educational site.

[3] Site-specific planning for all riparian zones to modify existing habitat management plans (HMPs) or allotment management plans (AMPs) and to make site-specific input into various coordinated resource management activity plans (CRMAPs) for implementation of the resource management plan (RMP).

[4] In all pertinent allotments within each alternative, modify AMPs to meet the specific decisions within the RMP.

[5] Site-specific planning on all intensively managed wildlife areas (i.e., Los Mogotes, Trickle Mountain, and Blanca). Developed or updated HMPs to reflect decisions in the RMP. In some other areas, site-specific planning for wildlife habitat within a CRMAP.

[6] Site-specific planning on all intensively managed forest and woodland resources. In the Existing Management and Resource Production Enhancement Alternatives, separate forest management plans (FMPs) would likely be developed. In the Natural Resource Enhancement and Preferred Alternatives, site-specific planning would likely be done as part of a CRMAP.

[7] Site-specific planning for lands actions, etc., would be part of an area-wide combined support services management plan (SSMP) with other supporting services (i.e., access, transportation, cadastral, off-highway vehicle, engineering, hazards, etc.) to fulfill RMP decisions.

[8] Site-specific planning to assure that RMP decisions are implemented. In the Existing Management Alternative, CRMAPs would be completed on all areas that meet the screening criteria. In the Natural Resource Enhancement and Resource Production Enhancement Alternatives, management plans would be developed on the ACECs, and CRMAPs would be developed on areas that meet the screening criteria. In the Resource Production Enhancement Alternative, no site-specific planning on areas of special concern.

[9] Similar site-specific planning as in [7].

[10] In the Existing Management, Natural Resource Enhancement, and Preferred Alternatives, either cultural resource management plans (CRMP) or specific input into a CRMAP would be accomplished. Only site-specific planning in the Resource Production Enhancement Alternative would be accomplished for the "discharged use" sites.

[11] Either a recreation area management plan (RAMP) or specific input into a CRMP for intensively managed areas. Site-specific planning as part of an area-wide SSMP detailing extensive recreation management needs (e.g., recreation opportunity signing, off-highway recreation control signing, monitoring, etc.).

Climatic conditions would be monitored and analyzed when appropriate. For example: rangeland vegetation condition assessments would analyze both climatic and grazing management, and mineral development plans would analyze both climatic and mineral development reclamation. In no case are significant adverse impacts to climate expected under any of the four management alternatives.

## Air Quality

Air quality degradation would be minimized through strict compliance with Federal, state, and local regulations and implementation plans. For example, air quality impacts from prescribed burns are limited by BLM Manual 7723 (Air Quality Maintenance Requirements), which requires a state-approved open burning permit prior to implementation. These impacts would be small in scale and dispersed through the planning area. Increasing off-highway vehicle (OHV) use in open areas might accelerate soil erosion and increase fugitive dust emissions; however, dust suppression control devices would not be practical. Additional management activities include monitoring, analysis, and impact mitigation on a project-specific basis, which assures compliance with applicable regulations and implementation plans. In no case are significant adverse impacts to air quality expected under any of the four management alternatives.

## Soils

Surface-disturbing activities including grazing, mineral development, forest and woodland harvest, and OHV use might cause a very slight loss of watershed values throughout the planning area during the life of the plan. Allotment grazing adjustments and standards with stipulations for other resource actions would decrease erosion and potentially enhance watershed characteristics for a net watershed value increase.

Construction of transmission and communication facilities in designated utility corridors and communication sites might adversely impact soil on a short-term basis with very insignificant effects overall.

## Water Resources

Legal rights would be acquired to use water in support of BLM programs, including the water needs of BLM recreation sites, commercial and concession facilities, special plant and animal habitat areas, state and local government recreation and public purposes lease areas, livestock management allotments, and wildlife habitat areas.

Water quality would continue to be maintained or improved in accordance with state and Federal standards. BLM would consult with the appropriate state agencies on proposed projects that could significantly affect water quality. Management actions on BLM land within municipal watersheds would continue to be designed to protect water quality and quantity.

The Bureau water use inventory and water rights program within the planning area would continue to be implemented. As new projects are completed and old ones are maintained, re-evaluating and updating would be required.

Monitoring of selected ground water and surface water stations would be continued in cooperation with USGS. Potential impacts to surface water resources are not as critical or probable as to ground water resources.

A study is needed on the lower Rio Grande River, from Alamosa to the New Mexico State line, to determine water quality values and minimum flow requirements for recreation and fisheries. This study is needed in all four plan alternatives. A cooperative agreement with the Closed Basin Project of the Bureau of Reclamation, BLM, and the states of Colorado and New Mexico could provide additional water during low flow periods. The Closed Basin canal could be managed to maintain minimum flow in this section of the river during late summer and early fall. Flows under 10 cfs have been experienced during drought cycles, and increased flows could greatly enhance the lower Rio Grande River, which has important wildlife values and is being considered for a special management recreation area (SMRA) and wild and scenic river designation.

Watershed activity plans would be developed and implemented on areas where livestock grazing plan adjustments would not fully correct any determined water quality problem. Cooperation with the range program in the development, implementation, evaluation, and modification of AMPs as affected by watershed values would continue as a top priority in the watershed program.

Monitoring and evaluation of water quality and quantity, as well as control of erosion and sediment production, would remain high priority management goals. Emphasis would be to continue all watershed activities that provide protection, maintenance, and enhancement of the watershed resources, including the support watershed provides to other resource programs and activities.

The BLM in Colorado would continue to take an active role in the control of nonpoint source pollution on public lands. BLM is an active participant on the state of Colorado Nonpoint Source Taskforce and Agriculture/Silviculture Subcommittee. Through these organizations, BLM would

identify nonpoint source pollution areas for the updating of the Colorado Nonpoint Assessment Report. It is the policy of BLM to protect, maintain, restore and/or enhance the quality of waters on public lands. The implementation of best management practices would be utilized to help achieve this goal. Funds would be requested for planning and project implementation for nonpoint source control with emphasis placed on the priority watersheds identified in the Colorado Nonpoint Source Management Program report. Nonpoint source control projects would be implemented as funding and manpower allow.

## Geology, Topography, and Minerals

Federal oil, gas, and geothermal minerals estate on both Federal and split-estate lands would be open to leasing under standard base terms with the exception of the following nondiscretionary closures:

1. 320 acres of fluid mineral estate within the incorporated town of Del Norte, Colorado.

2. 16,794 acres of fluid mineral estate within the wilderness study areas (WSAs) are closed to oil and gas leasing in accordance with section 43 of the *Federal Onshore Oil and Gas Leasing Reform Act* of 1987 pending a final determination by Congress as to suitability for inclusion into the wilderness system. The recommendation of the Canon City Final Wilderness EIS and the U.S. Forest Service study identifies 3,300 acres as suitable for recommendation as wilderness. The remaining 13,494 acres were recommended for return to multiple use management and, therefore, are assumed to be subject to the applicable leasing decisions of this plan. No lands within a WSA, however, would be considered for lease pending a final determination by Congress.

Other conditions for leasing, such as no surface occupancy (NSO) and seasonal stipulations, which are shown in Appendix B, are assigned as required by the management prescriptions; these special stipulations would apply to Federal surface and split-estate lands. The following fluid mineral estates would be subject to a no surface occupancy stipulation under all alternative analyses:

1. 160 acres within the unincorporated town of South Fork, Colorado.

2. 360 acres within the park site under R&PP lease to the city of Monte Vista, Colorado.

3. 840 acres within the Pike Stockade State Historic Park.

Under all four alternatives, these lands and improvements have been determined to be incompatible with any form of surface use by fluid mineral operations.

Resource information for fluid mineral estate, on which recommended stipulations are based, would be verified during review of Applications for Permit to Drill (APD). Onsite inspection and consultation between BLM, surface owner, and operator may reveal that (1) the impacts addressed by the stipulation would be avoided and/or mitigated to an acceptable level, or (2) the resources of concern are not present. On either of these determinations by the authorized officer (A.O.), the stipulations can be waived, modified, or excepted without public notice other than that required in the APD process. Consultation with the private surface owner for split-estate lands would provide for consideration of private use of the surface to the fullest extent possible. If, after the onsite inspection and consultation, it is determined by the A.O. that conditions necessary to avoid impacts to private resources would adversely impact the public resources addressed by the lease stipulation, such impacts would be assessed. If, based upon such an assesment, the A.O. makes a decision to substantially change or waive one or more stipulation, a 30-day public review period would be provided in addition to the public notice period required under normal APD review process.

Based on past exploration and future projections concerning fluid mineral activity, the reasonably foreseeable level of development within the planning area for all alternatives analyzed would involve a maximum of 10 APDs and 7 geophysical NOIs per year. This level of activity would result in an estimated 40 acres of surface disturbance per year. A description of the typical fluid minerals operation and standard operating practices employed in the SLRA is provided in Appendix B and the Oil and Geothermal Technical Report.

Wilderness designation of 3,300 acres of BLM lands contiguous to the Rio Grande National Forest would withdraw these lands from all forms of minerals appropriation subject to valid existing rights in accordance with Section 4(d)(3) of the *Wilderness Act.* This wilderness and associated impacts were considered to be the same under all alternatives. Such designation would not result in any significant impacts to mineral resources because of the low mineral potential of these particular lands.

The geology and topography would not be affected by any of the alternatives and are, therefore, not discussed in Chapter 4.

## Vegetation

Overall trend, condition, and forage production would be expected to improve under all alternatives. Long-term impacts from soil-disturbing activities would be mitigated with standard operating practices for rehabilitation of disturbed sites and grazing allotment adjustments.

Manipulation of vegetation, although not proposed in any alternative, would involve mechanical, chemical, and fire practices. Site-specific planning and any needed NEPA documentation would be accomplished if a proposal were made during the life of this land use plan.

Ecological site determinations would be completed for the planning area. Vegetation resource value protective measures would be developed and then implemented for all resource actions. Maintenance, improvement, and/or replacement of the vegetation resource would continue to be a priority concern in all actions in all alternatives.

Overall objectives would be to move toward good condition based on site potential using grazing management, if possible, and if necessary, vegetation manipulation practices or other techniques would also be used to accomplish this. Specific desired plant communities would be described in activity plans and in most cases would be a diverse community of grasses, shrubs, and forbs.

## Livestock Grazing Management

Overall livestock grazing management would be based on the 1978 San Luis Grazing Environmental Statement. Only the differences/changes in each of the alternatives are shown.

Livestock grazing would be managed on the 149 allotments or approximately 474,000 acres currently being grazed and approximately 32,400 AUMs would be authorized annually for livestock use on these allotments. Adjustments in the actual AUMs would be authorized and made when climatic or other conditions warrant a temporary increase or decrease in livestock use. Temporary livestock grazing would be allowed, pending an environmental assessment (EA), on approximately 4,000 acres recently acquired.

Presently there are approximately 42,000 acres unallotted to livestock grazing of which approximately 13,000 acres are presently considered as unsuitable. Livestock grazing could be allowed or reallotted on these lands if they are determined to be suitable through monitoring and documented with an EA. Lands considered unsuitable for grazing are shown on Map 2-7.

The 36 allotment management plans (AMPs)s) not implemented would continue to be reviewed and implemented, and the 59 AMPs currently fully implemented would be continued.

Typical range improvements are listed in Appendix D. The extent, location, and timing of such improvements are described in AMPs. The highest priority for implementation generally would be assigned to those improvements for which total anticipated benefits exceed costs. Funding would be from contributions from operators and others and BLM funding capability.

New range improvements would be constructed if needed to achieve AMP objectives and/or implement the grazing management programs prescribed in the AMPs. Manipulation of vegetation can be used if needed to meet management objectives.

Monitoring studies would be continued or established on all allotments. Allotment categorization would determine the monitoring intensity with the "I" category receiving the highest intensity of monitoring studies. The specific type of studies would be determined by the AMP objectives.

The public lands can be grazed by livestock between May 1 through February 28 each year provided the following criteria are met:

The objectives of the AMPs, HMPs, CRMAPs, etc. are met.

There is no conflict with crucial wildlife use or conflict can be mitigated.

Continued spring usage would not be allowed.

All grazing allotments in the planning area have been assigned to one of three management categories. The "M" category allotments generally would be managed to maintain current satisfactory resource conditions; "I" allotments generally would be managed to improve resource conditions; and "C" allotments would receive custodial management to prevent resource deterioration. These categories are based on present conditions, potential of improvement, conflicts with other resources, and opportunities for positive economic return on public investments (see Appendix D). The management category for an allotment could be changed after the RMP/EIS is completed if there is a change in the category criteria status of the allotment and/or monitoring studies and an allotment evaluation indicate a change is warranted.

If monitoring studies show that livestock use changes are necessary to achieve established management objectives, corrective action would be taken. Livestock use adjustments are most often made by changing one or more of the following: class of livestock, season of use, stocking rate, or the grazing management system. Although most livestock use adjustments would occur in the "I" allotments, use adjustments could occur in the "C" and "M" allotments. Changes can be made with an EA and AMP revision.

Types of grazing systems to be implemented are described in Appendix D and are normally implemented by an AMP; however, they might be incorporated in a coordinated resource management activity plan (CRMAP). AMPs are generally prepared in consultation, cooperation, and coordination with the permittee and other affected interested

parties to meet multiple use and land use plan objectives. Permittee requested changes on current grazing management could be made with an EA.

## Wildlife and Fish Habitat Management

All BLM lands (520,677 acres) would be considered for protection and enhancement of wildlife habitat values. Monitoring of the Blanca and Trickle Mountain Habitat Management Plans (HMPs) and crucial big game winter range, birthing areas, and raptor sites would continue.

Existing stream fisheries would be maintained. Improvements in condition and stability would be accomplished through the riparian programs where the potential exists. Emphasis would be placed on warm water fisheries on the Blanca Wildlife Habitat Area (WHA).

Supplemental releases and re-introduction of native or naturalized fish and wildlife species (excluding Federal or state listed endangered, threatened, candidate, or sensitive species) could be authorized by the manager following environmental analysis.

## Lands and Realty Management

Lands actions are generally initiated by the public and on an infrequent basis. Disposal of a small amount of public land by direct sale has occurred over the past 5 years, which is done according to FLPMA criteria. Since exchange is the preferred method of disposal, the amount of land for direct sale is small. Most BLM lands in the SLRA are in large blocks; therefore, only a small percentage would be considered for disposal by any method.

Lands would be placed in the following categories:

1. Category I lands would be disposal tracts. These are lands that meet the criteria for disposal through public sale under Section 203 of the *Federal Land Policy and Management Act* (FLPMA). This category should be further qualified to indicate that the disposal determination is contingent on the lands meeting NEPA and other statutory requirements if additional site-specific field work is necessary. Although this category would include those lands that meet the public sale criteria of FLPMA, other means of disposal would not be precluded. The priority to be given each disposal technique should be indicated in the activity plan itself or language included that indicates that disposal technique, priorities, and implementation timing would be addressed in an activity plan to be developed at a later date. The plan should indicate that no acquisitions would be made in areas that are in this category.

2. Category II lands are BLM lands, which, for the purposes of land tenure adjustment, are the existing land base to be managed by the Bureau under multiple use concepts. Lands in this category would not be considered for sale under Section 203 of FLPMA. This existing land base, however, would be available for disposal on a case-by-case basis through boundary adjustment, state indemnity selection, Recreation and Public Purposes Act applications, or other appropriate statutory authority, if disposal serves the national interest. Land exchanges would be considered in these areas if the exchange would result in a consolidated land ownership pattern, improved manageability of natural resources, or otherwise be in the public interest consistent with the provisions of Section 206 of FLPMA. Acquisitions would be made in areas placed in this category if these same criteria are met.

Specific exchange priority tracts may be identified within this category, provided the remaining lands are not termed "retention areas." Criteria for acquisition priorities may also be identified for areas within this category. A land tenure adjustment activity plan would be developed, which would address the objectives of land tenure adjustment in light of other resource management programs for lands included in this category.

## Wilderness Management

The WSAs would be managed under *BLM Interim Management Policy and Guidelines for Lands Under Wilderness Review* (IMPG) until Congress makes a decision on wilderness recommendations in the Canon City District. In accordance with Section 603 of FLPMA, BLM is required to manage all identified wilderness study areas under the nonimpairment mandate. Valid existing rights must be recognized and are an exception to the nonimpairment mandate. Those grazing, mining, and mineral leasing uses existing when FLPMA was approved on October 21, 1976, may continue in the same manner and degree as on that date, even if the use would impair wilderness suitability.

Mining operations occurring as of October 21, 1976, may continue in the same manner and degree as long as they do not cause unnecessary or undue degradation. Mining operations proposed after this date, however, are subject to the nonimpairment requirements for all operations proposed.

An interagency agreement between the U.S. Forest Service (USFS) and BLM dated February 20, 1981, provided for the joint study of adjoining areas and designated the USFS

as the lead agency in the study. A proposal has been made to Congress recommending 3,300 acres of contiguous BLM wilderness study areas (Black Canyon, South Piney Creek, Papa Keal, and Zapata Creek WSAs) suitable for wilderness designation.

Two other designated BLM WSAs (Sand Castle and San Luis Hills) would be managed in accordance with BLM and congressional directives. These WSAs, which are not recommended by BLM for wilderness designation in the *Final Canon City District Wilderness Environmental Impact Statement* dated December 1987 would be returned to other multiple use management if not designated by Congress. It is not likely that the wilderness values would be adversely affected by any of the management alternatives. In the Existing Management and Resource Production Enhancement Alternatives, the wilderness values would likely be protected through analysis and management, determined through a site-specific multiple use CRMAP. In the Natural Resource Enhancement and Preferred Alternatives the two areas would be managed as ACECs. There would not be a significant difference in net effect on wilderness values in any of the four alternatives.

## Areas of Special Concern

Within the 8.8-mile proposed wild and scenic river corridor, management would be the same in all alternatives for all resources except for minerals, recreation, areas of special concern, and waterpower/storage.

Values within the 8.8-mile segment would be managed for nondegradation, protection, and enhancement. Existing land uses and valid rights would continue. New uses and developments would be compatible with general management principles in the *Wild and Scenic Rivers Act.*

## Access and Transportation Management

Existing roads and trails would be managed as prescribed in the transportation plan, and access would continue to be acquired as needed until the RMP is completed. At that time the RMP would be implemented according to which ever alternative is chosen and would include an access and transportation services activity plan. Four-wheel drive use would be limited seasonally on 25 roads to protect muddy unsurfaced roads. The Natural Resource Enhancement Alternative would allow access and transportation that might be somewhat different than that in the Resource Production Enhancement Alternative. The specific differences in numbers, kinds, and lengths of transportation developments and exact locations and sizes of access needs cannot be described until the support services management plan is complete. This plan would detail roads, trails, engineering requirements, acquisition, withdrawals, points of access, etc., for final land use plan implementation. Specific access and transportation impacts, therefore, will not be analyzed in chapter 4 of this document and will be treated on a common basis for each alternative. The exception is that several other resources would be affected by access and transportation, and some minor impacts may be analyzed.

## Historical Resources

All 39 historical sites would receive minimal legal protection. Historical resources would be inventoried as appropriate, and clearances would be conducted on all sites with any proposed surface-disturbing activities. Measures designed to protect 18 significant historical resources would be required in all land use activity plans. The Cumbres and Toltec Scenic Railroad, a National Register of Historic places site, would receive special protective management.

## Fire Management

Any fire occurring in the resource area would be suppressed. No conditional suppression areas with special fire condition values, such as ACECs or SRMAs are considered in this plan.

Prescribed burn plans and necessary NEPA documentation would be written for areas requiring vegetation manipulation; however, no specific areas are identified.

## Economic Conditions and Social Environment

The local and regional economic conditions and social environment would be described. In addition, a resources economic analysis would be developed. This analysis only includes recreation, range, wildlife, and forestry.

## Hazards Management

Hazard sites/areas would be reviewed on a case-by-case basis. Management of other resources would always involve the needed reclamation of known hazard sites/areas as part of fulfilling objectives for management of that resource. On completion of this plan, a hazard reclamation activity plan

for known sites/areas would be developed. If the known hazard site is in or adjacent to an area where a coordinated resource management activity plan (CRMAP) is to be done, the reclamation activity plan would be combined with that CRMAP.

Existing sites/areas from past mineral development, which are considered to be potentially hazardous because of high side walls, deep pits, etc., would very likely continue until the Colorado Mined Land Reclamation Hazard abatement project is completed. The goal of this long-term project is to eliminate the hazards of these sites/areas, and BLM would continue to fully cooperate with this agency in this effort.

The Bureau would continue to control trespass dumping on BLM lands through increasing public awareness, signing, and monitoring these site/areas. A planning area reclamation activity plan would provide the details as to onsite closures, signing, site reclamation needs, etc., to implement hazard abatement.

### Special Status Plant and Animal Species

Threatened and endangered species and sensitive species and plant associations would be inventoried and monitored as necessary to provide information for proper management.

Supplemental releases and reintroduction of Federal and state listed endangered, threatened, candidate, and sensitive species would be enacted following environmental analysis and consultation with the U.S. Fish and Wildlife Service (USFWS), the Colorado DOW, Colorado Natural Areas Program (CNAP), and other affected parties.

### Waterpower/Storage

Those potential waterpower/storage reservoir sites under a land withdrawal would continue to be intensively managed for waterpower values. The exception would be the waterpower site withdrawal near the Colorado/New Mexico border within the 8.8-mile recommended Rio Grande River Corridor segment for national wild and scenic river designation. In the Natural Resource Enhancement and the Preferred Alternatives, this withdrawal is recommended for termination if the wild and scenic designation is approved.

Potential sites not presently withdrawn would be identified and restrictively managed for waterpower/storage sites. Unnecessary uses that might endanger the waterpower or reservoir values would be avoided. Before any uses would be allowed that might endanger the waterpower or storage values, the Federal Energy Regulatory Commission (FERC) would be contacted to determine whether the site is still not withdrawn. Sites would continue to be identified, investigated, evaluated, and recommended for withdrawal as needed.

## ALTERNATIVES CONSIDERED BUT NOT ANALYZED

Ten alternatives were considered within this resource management plan/ environmental impact statement (RMP/ EIS); however, six were rejected after detailed analysis. Portions of all six may be developed within one of the four alternatives analyzed within this plan.

### Maximum Resource Enhancement Alternative and Maximum Production Enhancement Alternative

The extremes of the spectrum for natural resource enhancement and production resource enhancement were considered, and each extreme of resource management, with little or no constraints, was presented in these two alternatives. Neither of these was considered feasible nor could the management be implemented for the resources in the San Luis Planning Area. Both were considered to be in violation of the mandate to manage BLM land resources on a multiple use, sustained-yield basis.

### Increased Budget Alternative and Decreased Budget Alternative

These two alternatives considered the potential level of resource management in the San Luis Planning Area based on the amount of available funding. It was decided, however, that the topics to be addressed in the plan could not be thoroughly analyzed using this approach. It would not be practical to develop land use decisions and allocations based on what monies might or might not be available. This approach also did not appear to meet the mandate of multiple use, sustained-yield management of BLM land resources.

### Moderate Natural Resource Enhancement Alternative and Moderate Resource Production Alternative

A moderate point between the two alternatives chosen for detailed analysis was considered in this alternative. It was rejected because in many ways it would have duplicated the analysis within the Existing Management Alternative and did not really provide the decision maker with additional analysis. Also in reality, the Preferred Alternative would likely present a very similar analysis at this level of resource management and, therefore, would not add to the overall RMP/EIS land use analysis.

## EXISTING MANAGEMENT ALTERNATIVE

The objective of this alternative would be to continue the present levels, methods, and mix of multiple use resource management, utilization, and protection. Management decisions would be based on current policies, regulations, and direction within this alternative. A ranking table is not presented here as in other alternatives because this would not reflect the management direction within the existing management framework plans (MFPs).

### Minerals Management

Federal oil, gas, and geothermal resources on 617,251 acres or 99.5 percent of mineral estate would be open to leasing. No surface occupancy (NSO) and seasonal stipulations would be applied to Federal mineral estate as appropriate. Seasonal stipulations prescribed within the Umbrella EA would also apply to seismic and drilling activities.

Seasonal limitations (from December 15 through March 31) would be placed on 240,846 acres of big game crucial winter range, antelope yearlong range, and birthing areas. Waterfowl nesting areas would be seasonally limited on approximately 7,750 acres from February 15 to July 1. Total seasonal limitations would involve approximately 248,596 acres.

No surface occupancy (NSO) leasing limitations would be placed on 6,260 acres of bighorn sheep lambing range, 150 acres of bald eagle habitat, 1,200 acres within the Pike Stockade site and the Monte Vista R&PP park sites, and 4,395 acres within the Rio Grande River Corridor Special Recreation Management Area. The total NSO acreage would be 12,005 acres.

Federal mineral estate on approximately 610,621 acres (98 percent) would be open to entry and location. Mineral entry would be precluded on 3,300 acres of WSAs recommended for wilderness designation, 1,200 acres within the Pike Stockade/Monte Vista park areas, 200 acres of U.S. Forest Service administrative sites, and 5,550 acres of Blanca Wildlife Habitat Area (does not include the Emperius tract). The total acreage precluded would be 10,250 (2 percent). Historically, approximately 6 notices and 1 plan are received annually in the resource area.

Federal mineral estate on approximately 613,176 acres (99 percent) would be open to disposal of mineral materials (sand, gravel, rock, cinders, etc.). If necessary, seasonal limitations would be incorporated into authorizations for crucial big game wintering areas, waterfowl areas, and the antelope birthing area south of Villa Grove. Disposal of mineral materials in power site or other agency withdrawn areas would need approval from the agency reserving the withdrawal. Total seasonal limitations could involve 248,596 acres of the planning area.

Disposal of minerals would be precluded on 7,695 acres (1 percent), which include the proposed Rio Grande River Corridor SRMA (4,395 acres) and areas recommended for wilderness designation (3,300 acres).

### Paleontological Resources

Paleontological resources would continue to be inventoried, and appropriate protective measures would be developed for surface disturbing proposals.

### Riparian Resource Management

Management would maintain condition at present levels. Disturbance to riparian zones would be minimal in all surface-disturbing land use proposals. Land tenure opportunities and restoration of historic wetlands (880 acres) would be emphasized.

An inventory would be completed on an additional 1,413 acres with potential riparian values, and a riparian demonstration project on Ford Creek would be continued.

### Livestock Grazing Management

The estimated 10,000 AUMs of allotted increases in forage over the 20-year life of the plan from improvements on grazing management would be used for either wildlife or

livestock forage based on monitoring results as they become available.

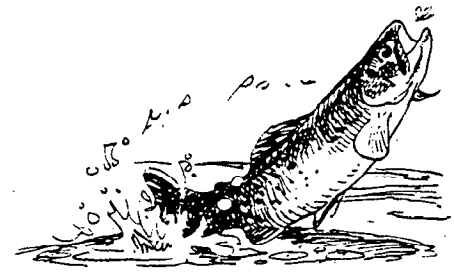
There potentially would be an estimated 30,000 acres of the total 42,400 acres of lands presently unallotted that would likely become suitable production acres during the life of the plan. In this alternative, these would potentially be made available for livestock forage as needed. This would be done after thorough forage monitoring, and the appropriate NEPA documentation has been prepared.

## Wildlife and Fish Habitat Management

Intensive management of wetlands (1,600 acres) and restoration of historic wetlands (1,175 acres) would continue to be emphasized primarily in and around the 7,750-acre Blanca WHA, which includes the Emperius tract. The Blanca WHA would be closed to the public from February 15 to July 1 to provide protection of waterfowl nesting, and the existing withdrawal from mineral entry would be retained. The Blanca WHA activity plan would be fully implemented. Acquisition of state and private lands with wetland riparian and aquatic values would be emphasized. Fluids mineral leasing NSO restrictions would be placed on 6,260 acres of bighorn sheep lambing range, 150 acres of bald eagle roosting habitat, and 1,080 acres of raptor nesting habitat. Fluid mineral leasing seasonal limitations, between December 15 through April 30, would also be placed on areas of big game crucial winter range, antelope birthing range, and waterfowl nesting areas totaling about 248,596 acres.

Management of Trickle Mountain WHA (44,521 acres) would follow the habitat management plan. This would include limited travel on existing roads and trails. Seasonal OHV restrictions for the protection of wintering wildlife would be used on an "as needed" basis.

Big game forage would be managed at current levels (about 48,000 AUMs) until studies determine that adjustments are needed to achieve wildlife management objectives. Neither livestock nor wildlife would automatically receive additional forage; it would be allocated on the basis of need, determined by monitoring studies and updated AMPs. Wildlife habitat monitoring studies would be established and/or maintained as needed on wildlife crucial winter range. Acquisition of state and private lands adjacent to or within crucial wildlife areas would be emphasized.

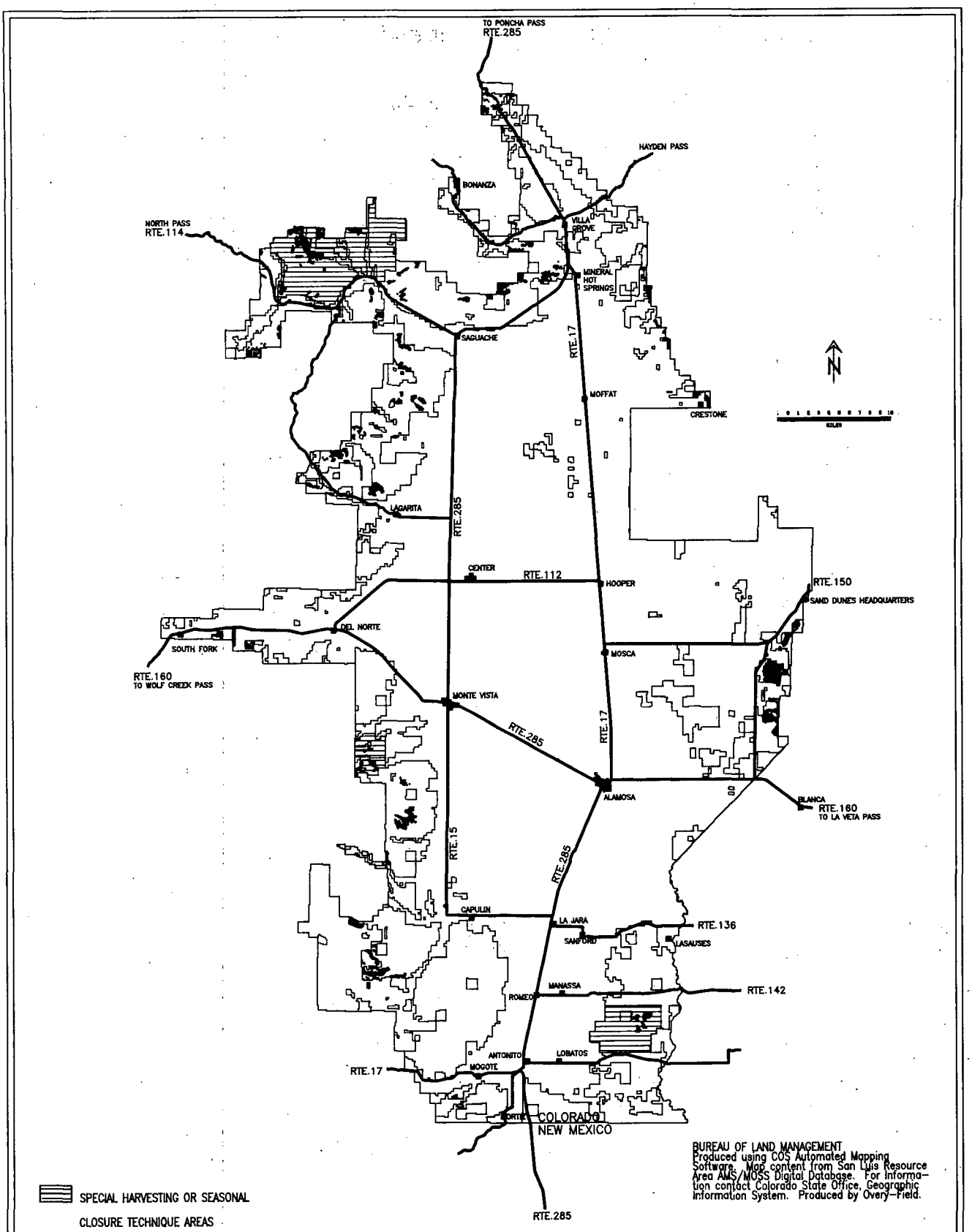


## Forest and Woodland Management

Available, operable forest lands, totaling 5,769 acres, and productive operable woodlands, totaling 10,688 acres, would be managed for sustained-yield production. Annual harvests would be within the allowable cut restrictions providing 288 Mbf of timber and 567 cords of fuelwood. Timber harvesting on approximately 4,315 acres (75 percent) would be limited during the winter months to protect wildlife values (Map 3-1). No harvesting is planned in wilderness study areas (Map 3-2).

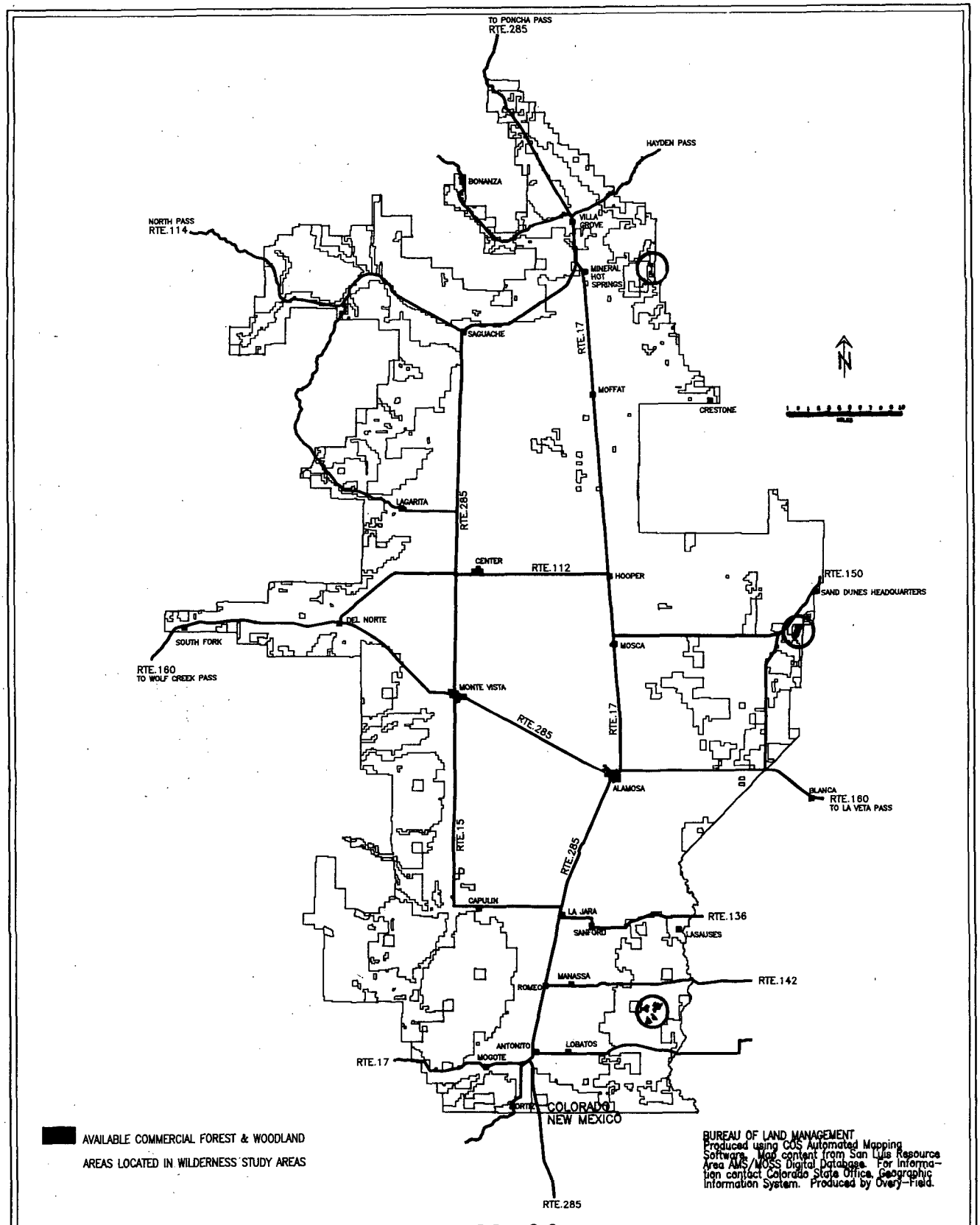
## Lands and Realty Management

A number of small isolated tracts of BLM land identified within the MFP would be considered for disposal through sale, exchange, or other appropriate methods. Prior to disposal, resources within identified tracts would be managed according to the management prescription in the MFP. Minimal funds would be spent for improvements on these lands. Federal mineral estate would be conveyed with surface estate if it would be in the public interest.




## Map 3-1
## Special Forest Harvesting (Existing Management)

FOR A BETTER PERSPECTIVE OF BLM OWNERSHIP, SEE THE FOLDOUT MAP AT THE BACK OF THE PLAN.




## Map 3-2
## Operable Commercial Forest Lands and Woodlands in WSAs
## (Existing Management)

FOR A BETTER PERSPECTIVE OF BLM OWNERSHIP, SEE THE FOLDOUT MAP AT THE BACK OF THE PLAN.

Existing withdrawals would be retained. These lands would not be subject to further consideration for disposal. No significant long-term investment would be made on waterpower withdrawals unless the investment could be recovered prior to the reservoir or waterpower development.

The resource area transportation plan would continue to direct access acquisition.

BLM lands would be open to consideration for development of all utility facilities. Stipulations and mitigating measures would be developed on a case-by-case basis.

## Areas of Special Concern

Of the 22 areas nominated for potential ACEC status, 10 met the criteria for relevancy and importance; however, none would be designated as ACECs in this alternative. For more details on the ACEC screening process, refer to Appendix H.

Special management on Blanca Wildlife Habitat Area, including the Emperius tract, (7,750 acres) and Trickle Mountain Wildlife Habitat Area, including Ford Creek Riparian area, (44,521 acres) would continue (see Map 3-3). The Rio Grande River Corridor (21.1 miles) would be designated an SRMA and would encompass about 4,395 acres. Of the 136,984 acres nominated for special management, 56,666 acres would receive special management; 80,318 would not.

## Recreation Management

A total of 508,532 acres of BLM lands would be managed for extensive recreation. The existing Blanca WHA (7,750 acres) and the proposed Rio Grande River Corridor SRMA (4,395 acres) would be managed for intensive recreation. No major new recreation sites would be developed; however, existing sites would be maintained and recreation use would be monitored.

Segments B and C of the Rio Grande River Corridor would be managed as an SRMA (refer to Map 2-20). The complete study report for the Rio Grande River Corridor is in Appendix E.

The following shows OHV designated acres of BLM land (Map 3-4):

Open: 463,346 Limited: 52,271 Closed: 5,060

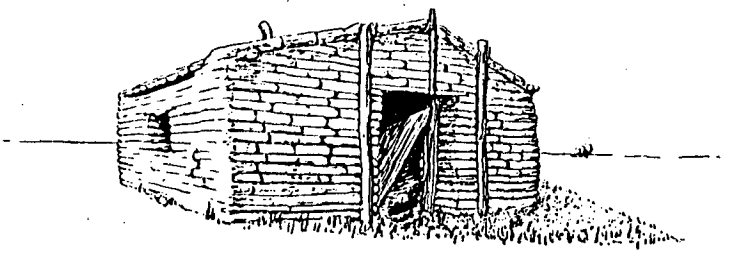
The closed OHV areas are within Segment C (1,760 acres) of the Rio Grande River Corridor SRMA (Map 2-22) and portions of four WSAs (3,300 acres) recommended for wilderness designation; the areas limited are Trickle Mountain and Blanca WHAs (52,271).

## Visual Resource Management

Present management of visual resource values on BLM lands would not entirely meet VRM class objectives and guidelines. For purposes of analysis, this management would continue in this alternative.

## Historical Resources

Management of the 18 significant sites (1,180 acres) would be in accordance with Section 106 of the National Historic Preservation Act of 1966 (as amended) and other appropriate legislation.

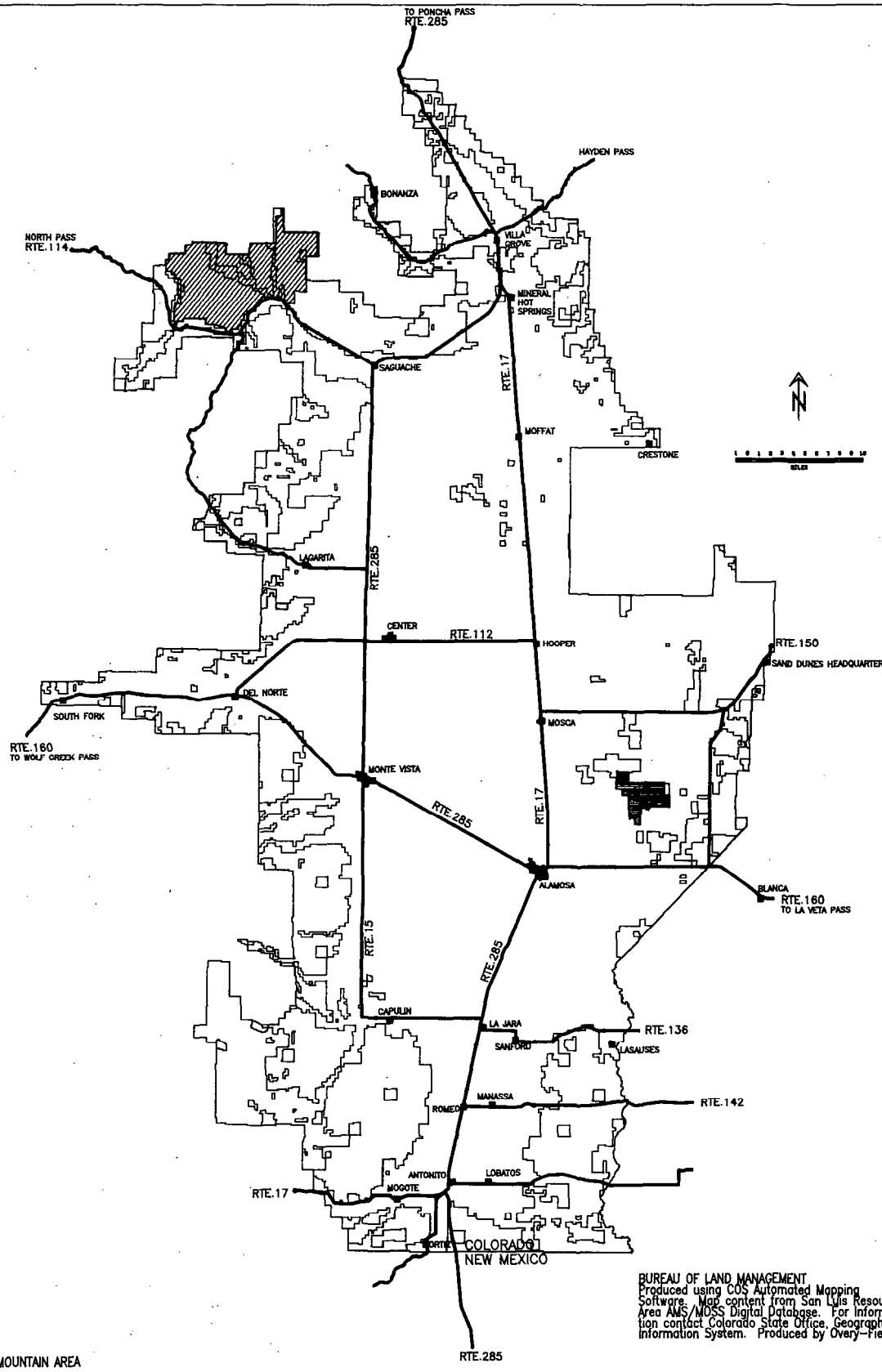


## Archaeological Resources

Management of archaeological resources would be in compliance with existing legislation and BLM policy.

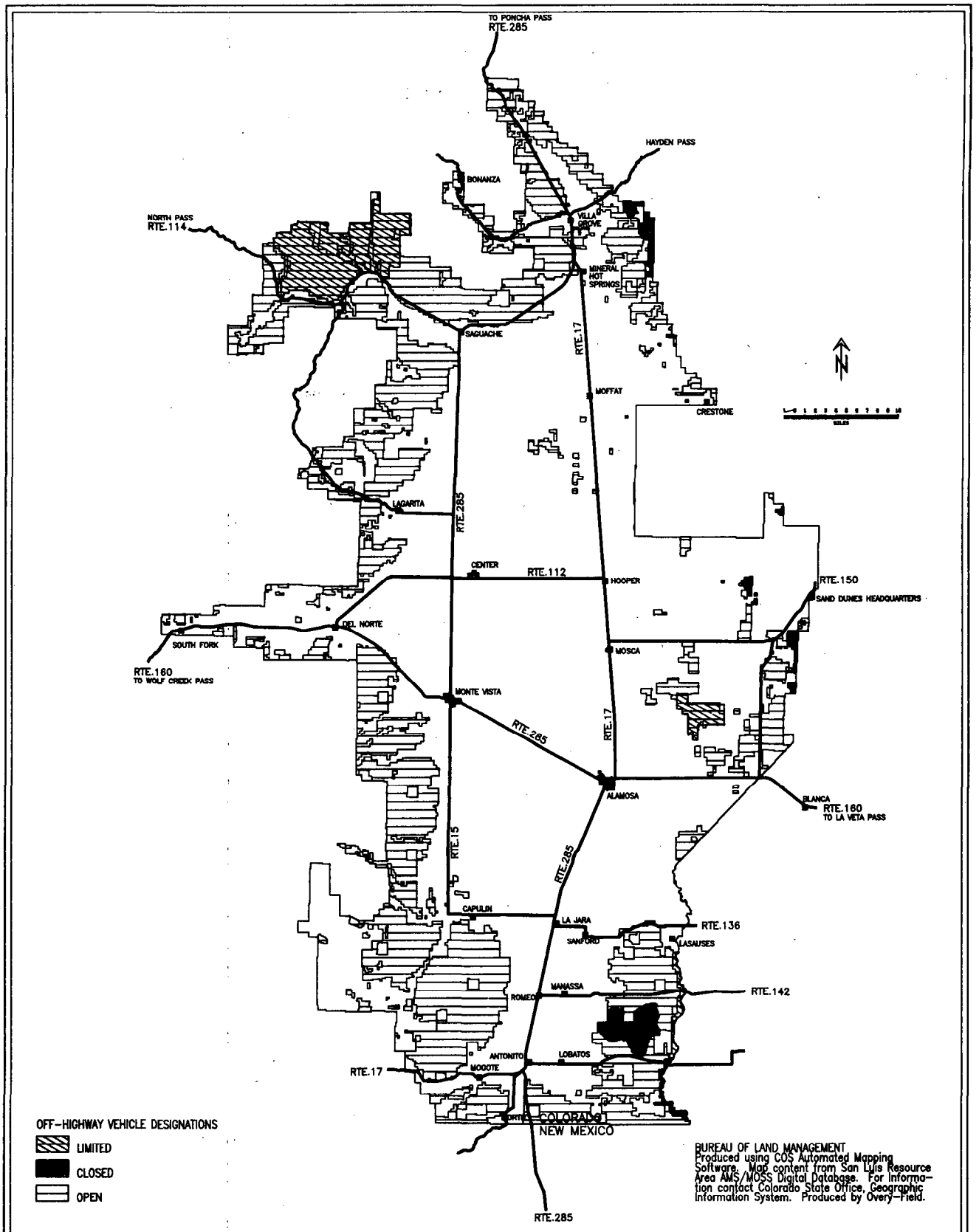
## Special Status Plant and Animal Species

Clearances would be conducted for all proposed surface-disturbing activities and the USFWS would be consulted as required. Measures designed to protect threatened and endangered species and their habitat would be required in all activity plans. Inventory efforts to determine if the black-footed ferret exists in some of the prairie dog towns in the southern part of the planning area would be required.




## Map 3-3
## Areas of Special Concern (Existing Management)

FOR A BETTER PERSPECTIVE OF BLM OWNERSHIP, SEE THE FOLDOUT MAP AT THE BACK OF THE PLAN.




## Map 3-4
## Off-Highway Vehicle Use (Existing Management)

FOR A BETTER PERSPECTIVE OF BLM OWNERSHIP, SEE THE FOLDOUT MAP AT THE BACK OF THE PLAN.

## Waterpower/Storage

Those reservoir sites with withdrawn land would continue to be managed for waterpower values. Management actions would be guided by the constraints imposed by the withdrawal, which would include leaving these lands in Federal ownership.

Those potential waterpower/storage sites identified would be restrictively managed to maintain that resource value. None of the sites identified for potential waterpower or reservoirs are unsuitable for management as waterpower or reservoir sites.

In addition to Management Guidance Common to All Alternatives, stipulations to protect the other resources in undeveloped sites from conflict with other resources should be developed for inclusion in FERC licenses.

# NATURAL RESOURCE ENHANCEMENT ALTERNATIVE

The objective of this alternative would be to continue multiple use management of BLM lands in the San Luis Planning Area. To facilitate analysis, the resources and resource uses to be enhanced are ranked to provide guidance for the multiple use mix description in this alternative. Management decisions would be based on current policies, regulations, and directions described in this alternative.

Emphasis would be on conservation and protection of resources and resource uses such as special plants/animal species, paleontological, historical, archaeological, riparian, visual resources, wildlife habitat, recreation, and areas of special concern. Enhancement of these would have priority over resource production. Sensitive, unique, and high-value resource areas would receive the highest level of protection. Table 3-2 lists the ranked resources or resource use as well as the nonranked support functions addressed in this alternative. Each function in the nonranked column is discussed as appropriate in each resource writeup.

TABLE 3-2
RESOURCE AND RESOURCE USE RANKING FOR THE NATURAL RESOURCE ENHANCEMENT ALTERNATIVE

| Ranking of Resource or Resource Use | Nonranked Program Support Functions |
|---|---|
| Special Plant and Animal Species | Lands and Realty Management |
| Paleontological Resources | Land tenure adjustment |
| Historical Resources | Withdrawals |
| Archaeological Resources | Access acquisition |
| Riparian Resources Management | Waterpower/Storage |
| Visual Resources Management | Areas of Special Concern |
| Wildlife Habitat Management | Economic Conditions and Social Concern |
| Recreation Management | |
| Off-Highway Vehicle Use | |
| Forest and Woodland Management | |
| Livestock Grazing Management | |
| Minerals Management | |
| Fluid minerals | |
| Locatable minerals | |
| Mineral materials | |
| Lands and Realty Management | |
| Rights-of-ways and utility corridors | |

## Minerals Management

Federal oil, gas, and geothermal resources on 617,251 acres or 99.5 percent of BLM land or mineral estate would be open to leasing. There would, however, be increased limitations on leasing and developing these resources because of the need to protect specific conditions or natural resources.

Seasonal limitations from December 15 through April 30 would be placed on 376,355 acres of crucial winter big game habitat, antelope birthing areas, and eagle wintering areas. Waterfowl habitat areas would be seasonally limited on 7,750 acres from February 15 to July 1. Total seasonal limitations would involve approximately 384,105 acres.

No surface occupancy (NSO) leasing limitations would be placed on 46,950 acres of big game winter habitat crucial to three or more species, 6,260 acres of bighorn lambing range, 150 acres of bald eagle habitat, 1,200 acres within the Pike Stockade and the Monte Vista park R&PP sites, 6,016 acres within the Rio Grande River Corridor Special Recreation Management Area (SMRA) (which includes the 1,760-acre wild and scenic proposal), 3,230 acres of riparian zones, 23,299 acres of semiprimitive nonmotorized (SPNM) areas, and 740 acres of six eligible National Register Cultural sites. The total NSO acreage would be 87,845 acres.

Federal mineral estate on 601,665 acres (97 percent) would be open to entry and location. Mineral entry would be precluded on 3,300 acres of WSAs recommended for wilderness designation, 1,200 acres within the Pike Stockade/Monte Vista park areas, 200 acres of U.S. Forest Service administrative sites, 7,750 acres of Blanca Wildlife Habitat Area (includes the Emperius tract), 6,016 acres within the Rio Grande River Corridor SRMA (which includes the 1,760-acre wild and scenic proposal), and 740 acres of six eligible NRHP sites. The total acreage precluded would be 19,206 (3 percent).

Closure of 40,104 acres to OHV use and designation of the 10 ACECs totaling 138,605 acres would require the filing of a plan of operations in accordance with 43 CFR 3809 to provide for adequate natural resource protection.

Federal mineral estate on approximately 525,643 acres (84 percent) would be open to disposal of mineral materials. Sales would not be allowed in the same areas requiring NSO or the Cumbres and Toltec Scenic Railroad (approximately 91,608 acres or 15 percent) and closed (3,620 acres or 1 percent) as identified in the fluid minerals section. If necessary, seasonal limitations would be incorporated into authorizations in crucial big game wintering and birthing areas and waterfowl nesting areas. Total seasonal limitations could involve 384,105 acres of the planning area.

## Paleontological Resources

Paleontological resources would be intensively inventoried, and appropriate protective measures would be developed for surface-disturbing proposals. A collection area for invertebrate fossils near Clayton Cone would be identified for use by the interested public. Development of this site would be coordinated with the recreation program.

## Riparian Resources Management

Several protection and enhancement measures would be executed in addition to those discussed under Riparian Resource Management in the Existing Management Alternative.

Special protection measures would include no sale provisions for mineral materials; limited OHV designations in riparian zones associated with perennial streams; no disposal of riparian areas except through land exchanges; and no surface-disturbing activity related to rights-of-way within riparian zones.

Special riparian enhancement measures would include increased emphasis in the acquisition program; establishment of demonstration areas such as Ford Creek, La Garita Creek, etc.; modification of livestock allotment management plans to improve the condition of riparian areas; and continued restoration of riparian wetlands.

## Livestock Grazing Management

The estimated 10,000 AUMs of allotted land increases in forage that become available over the life of the plan from improvements on grazing management would be used for enhancing wildlife forage.

Potentially an estimated 1,500 AUMs would become available on the unallotted lands during the life of the plan. This new forage would be made available based on documented needs for wildlife. This would be done after thorough forage monitoring and appropriate NEPA documentation preparation.

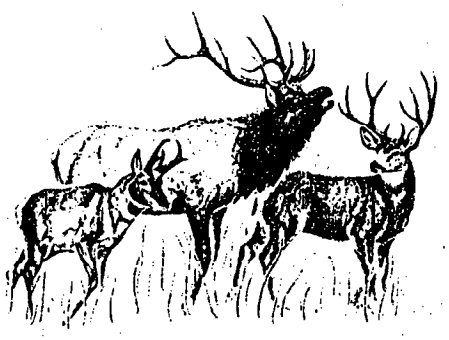
## Wildlife and Fish Habitat Management

Intensive management of wetlands (2,257 acres) and the restoration of historic wetlands (1,825 acres) would be emphasized for all identified wetland areas. The Blanca ACEC/WHA (7,750 acres including the Emperius tract) would be closed to the public from February 15 to July 1 to provide protection of waterfowl nesting and would be withdrawn from mineral entry. The Blanca WHA activity plan would be fully implemented. Acquisition of state and private land with wetland riparian values would be emphasized.

Fluid minerals leasing NSO restrictions would be placed on big game crucial habitat for three or more species (46,950 acres), bald eagle nesting habitat (150 acres), bighorn sheep lambing range (6,260 acres), and raptor nesting habitat in the Rio Grande ACEC/SRMA (1,080 acres). Seasonal limitations (December 15 through April 30) would be used for fluid minerals leasing, mineral leasing, mineral material sales, and timber harvest on 384,105 acres of other big game crucial winter range, birthing areas, eagle wintering areas, and waterfowl nesting areas.

The HMP for the Trickle Mountain WHA (44,521 acres) and Blanca WHA (7,750 acres) would be incorporated into the ACEC coordinated resource management activity plan (CRMAP). This would include limiting travel to existing roads and trails. Seasonal OHV restrictions would be extended to all crucial winter ranges (333,480 acres) from December 15 through April 30. A CRMAP would also be completed on the Los Mogotes area (33,456 acres) with crucial big game winter range as a priority.

Big game forage would exceed 48,000 AUMs with the allocation of all additional forage produced. Enhancement measures for wildlife values would include modification of AMPs in crucial wildlife habitats.



## Forest and Woodland Management

Suitable commercial forest lands on 1,094 acres (19 percent) and productive operable woodlands on 6,982 acres (56 percent) would be managed for sustainedyield production. Annual harvest of 55 Mbf of timber and 370 cords of fuelwood would occur.

Timber management practices would be altered or deferred to protect special plant and animal specie areas, cultural resources, riparian areas, recreation values, and wildlife habitat. Timber harvest would not be allowed in riparian areas, recreational semiprimitive nonmotorized (SPNM) areas, or in ACECs. Seasonal limitations on harvesting would be required in crucial big game winter range. All timber harvesting would be required to meet VRM class objectives.

## Lands and Realty Management

Emphasis would be on acquiring significant lands with special plants and animal species, paleontological, cultural, riparian areas, wildlife habitat, and/or recreation values. All public lands would be classified as Category II lands (i.e., land in this category would not be considered for sale, but other methods of land tenure would be considered).

Existing withdrawals would be retained. The powersite withdrawal within the lower 8.8 miles of the Rio Grande River would be terminated if the recommended wild and scenic river corridor is designated. New withdrawals would be recommended to protect the wild and scenic river values (4,395 acres), Blanca ACEC/WHA (7,750 acres), and the six NRHPs (740 acres).

Access for protection and enhancement of natural values would be emphasized; e.g., access for monitoring and enhancement of special plants and animals, riparian areas, and archaeological and historical resources. Special emphasis would be given to access that would facilitate both BLM and National Forest Service management needs.

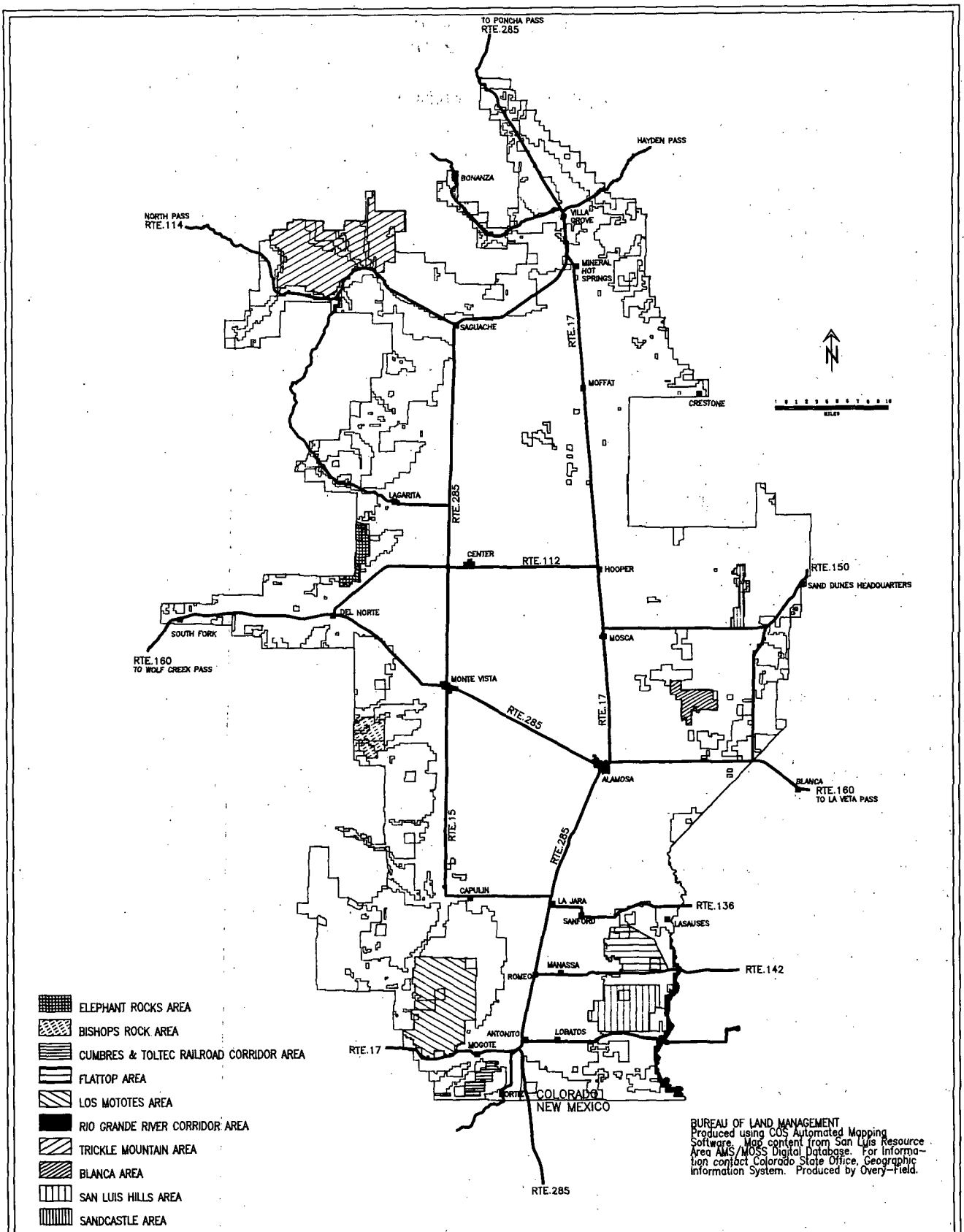
BLM lands would be considered for the development of utility facilities; however, no corridors would be established. Limitations would be placed on the location of rights-of-way to protect natural resources in intensive recreation areas, riparian zones, and special plant and animal specie areas. Location of rights-of-way would be avoided in ACECs, and VRM class objectives would be maintained within all rights-of-way proposals.

## Areas of Special Concern

Of the 22 areas nominated for potential ACECs, 10 met the criteria for relevancy and importance and would be designated in this alternative. For more details on the ACEC process, refer to Appendix H. Special management is needed to maintain and/or enhance the significant natural resources present on the following 10 areas (Map 3-5):

| | ACRES |
|---|---|
| Sand Castle WSA/Folsom Cattleguard Area (ACEC) | 3,595 |
| San Luis Hills WSA Area (ACEC) | 16,505 |
| Blanca Lakes Wildlife Habitat/Recreation Area (including Emperius tract) (ACEC/WHA/SRMA) | 7,750 |
| Trickle Mountain Wildlife Habitat/Ford Creek Riparian Area (ACEC/WHA) | 44,521 |
| Rio Grande River/Box Corridor (ACEC/SRMA) | 6,016 |
| Elephant Rocks Natural/Wagon Ruts Area (ACEC) | 4,171 |
| Flat Top Mesa Natural Area (ACEC) | 12,756 |
| Bishop Rock Natural/Dry Creek Pictographs Area (ACEC) | 6,011 |
| Los Mogotes Wildlife Habitat Area (ACEC) | 33,456 |
| Cumbres and Toltec Scenic Railroad (ACEC) | 3,824 |
| Total | 138,605 |

Existing wildlife habitat area (WHA) designation for Blanca and Trickle Mountain would continue. Special recreation




## Map 3-5
## Areas of Special Concern (Resource Enhancement)

*FOR A BETTER PERSPECTIVE OF BLM OWNERSHIP, SEE THE FOLDOUT MAP AT THE BACK OF THE PLAN.*

management area designations (SRMA) would be placed on Blanca (7,750 acres) and 28.4 miles of the Rio Grande River Corridor (6,016 acres). An 8.8-mile segment of the Rio Grande River Corridor SRMA would be recommended for inclusion in the Wild and Scenic River System to protect and enhance the national wild and scenic values. The 138,605 acres nominated for special management would be designated.

## Recreation Management

A total of 506,911 acres would be managed for extensive recreation, and Blanca SRMA (7,750 acres) and the Rio Grande River Corridor SRMA (6,016 acres) would be managed for intensive recreation. Development of recreation sites would occur within the Rio Grande River Corridor. This development would occur in Segments A and B, and the upper 2 miles of the 8.8-mile segment proposed for wild and scenic designation. Existing sites would be maintained and recreation use would be monitored. Where possible, recreation values on BLM lands would be maintained and enhanced. The Rio Grande River Corridor is defined as a tract of land from the New Mexico State line to the County Bridge approximately one-quarter-mile wide (about 6,016 acres), which includes the proposed 8.8-mile wild and scenic segment. All significant recreation areas along the Rio Grande River Corridor would be retained in public ownership. BLM would acquire additional acreage and access in these areas. Acquisition in the Rio Grande River Corridor could be accomplished either by fee title or through easement.

The following resource management restrictions would facilitate recreation management: All SPNM areas (23,299 acres) would be closed to timber harvesting and sale of mineral materials, and the Blanca and Rio Grande River Corridor SRMAs (13,766 acres) would have NSO restrictions for fluid minerals. Existing withdrawals would be retained for Blanca WHA, and a new withdrawal would be included in the legislation recommending the section of the Rio Grande River Corridor for wild and scenic designation (1,760 acres).

Off-highway vehicle (OHV) limited designations (e.g., seasonally limited and/or limited to roads and trails) would be placed in riparian areas (some of these areas may be closed), cultural resource areas (including all of the Sand Castle ACEC), special plant and animal areas, crucial wildlife winter and birthing habitat, special recreation management areas, and VRM Class II areas. Closed designations would be enforced in WSAs, the wild and scenic river segment of the Rio Grande Corridor, and recreational semiprimitive nonmotorized areas. The following shows OHV designated acres of BLM land (Map 3-6):

Open: 102,828 Limited: 375,996 Closed: 41,853

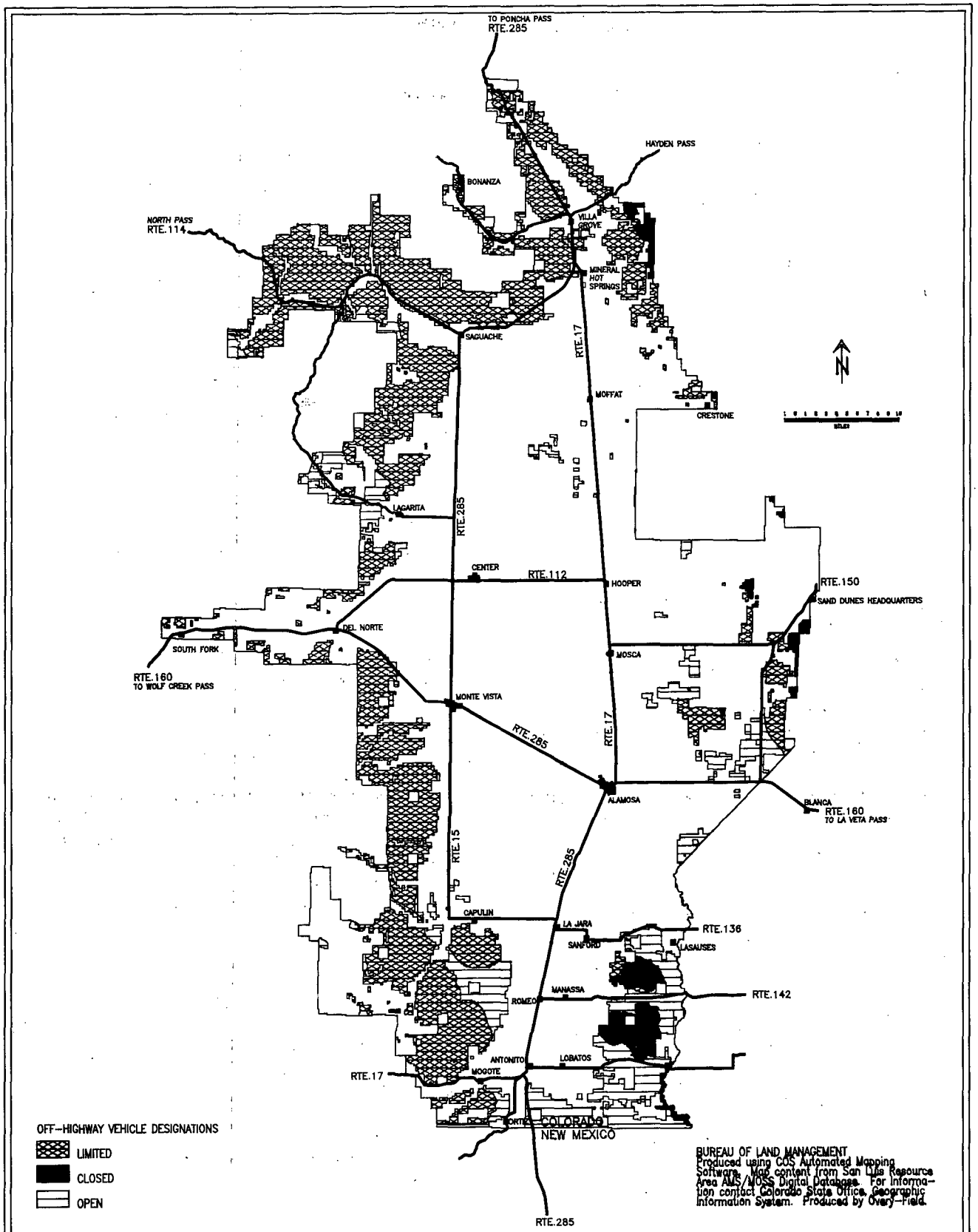
## Visual Resource Management

Visual resource values on all BLM lands would be managed according to VRM class objectives. Basically all management actions in this alternative would meet visual resource management class objectives. Where possible, forest harvesting and livestock grazing management would maintain and, in some instances, enhance visual resource management; e.g., improve the Blanca chaining from class IV to class III. ACECs would also be used to protect significant visual resources; the Cumbres and Toltec Scenic Railroad ACEC would be specifically designated to protect the railroad viewshed. New rights-of-way would be allowed if fully compatible with the visual class objectives. Disposal of class II areas would not generally occur except through exchange, and OHV use through these areas would be limited to protect the visual resources.

## Historical Resources

All 18 significant historical sites on BLM lands would be protected from adverse impacts of other resource uses. Five eligible national register sites (560 acres) would be sent forward as proposed for protection; e.g., remain in public ownership, closed to OHV, withdrawn from mineral entry, leased with NSO stipulation, limit access for administrative use, etc. CRMPs would be prepared on each of these five sites. Thirteen sites (620 acres) not eligible for the National Register of Historic Places would be managed according to policy in the BLM 8100 Manual and would be addressed in a valley-wide CRMP.

The five sites considered for NRHP nomination are: La Garita Wagon Ruts (200 acres), Poncha Pass Railbed (120 acres), Villa Grove-Orient Mine Railbed (120 acres), King Turquoise Mine (40 acres), and Ute Pass Road (80 acres). The Cumbres and Toltec Scenic Railroad and historically significant viewshed area would be designated as an ACEC. The La Garita Wagon Ruts site would also be included in the Elephant Rocks ACEC. These five sites would be available for public education/interpretation.




## Map 3-6
## Off-Highway Vehicle Use (Resource Enhancement)

FOR A BETTER PERSPECTIVE OF BLM OWNERSHIP, SEE THE FOLDOUT MAP AT THE BACK OF THE PLAN.

## Archaeological Resources

All archaeological sites determined to be significant would be protected from adverse impacts of other resources. Selected areas would be proposed for additional protection; e.g., closed to OHV, limit access to administrative use, mitigate with excavation, etc. Specific CRMPs would be prepared for these sites. Noneligible sites would be managed according to the BLM 8100 manual and an area-wide CRMP. Locations likely to qualify for inclusion on the NRHP as sites or districts are: Sand Castle/Cattleguard Folsom, Punche Valley, and Dry Creek Rock Art. Selected parts of these locations would be available for public education and scientific purposes. The Cattleguard Folsom site would be included in the Sand Castle ACEC to protect this significant cultural value.

## Special Status Plant and Animal Species

Management actions would be considered to change the stressed state to enhance, recover, or re-establish these special resources. Inventories would be conducted on BLM lands to determine needs for special protection/actions. OHV closures or limitations would be used in areas where these special resources exist or are believed to exist (e.g., eagle wintering areas). Forest management practices would be altered or deferred to protect these resources. Livestock management plans would be changed as necessary to improve the conditions of these special resources; i.e., season of use, amount of forage used, type of use, elimination of grazing, and addition of management structures.

Special plants and animals would be considered in CRMAPs for the following ACECs: Los Mogotes, Flat Top, San Luis Hills, Rio Grande River Corridor, Elephant Rocks, and Trickle Mountain and Blanca WHAs. Rights-of-way and utility corridors would be allowed only where fully compatible (through mitigation) with these special resources. Areas where these special resources exist or are believed to exist would remain BLM land. Enlargement or expansion of the land base at these locations to enhance the protection of these special plant and animal species would be emphasized through land tenure opportunities.

## Waterpower/Storage

All existing waterpower/storage sites would remain under protective withdrawal except for the withdrawal on the Rio Grande River Corridor near the Colorado/New Mexico State line. This withdrawal would be proposed for termination because of the potential designation of the wild and scenic river segment in Colorado (8.8 miles of canyon). This would be effective at such time as Congress acted on the RMP recommendation. Proposed legislation for the wild and scenic river corridor would contain a recommendation to include language to prohibit reservoir or waterpower sites from being licensed in the corridor. Any reservoir developments upstream from the corridor should consider the Alamosa National Wildlife Refuge, an officially designated critical habitat for whooping cranes under the *Migratory Bird Conservation Act.*

In addition to Management Guidance Common to all Alternatives, stipulations to protect the other resources in undeveloped sites from conflict with other resources should be developed for inclusion in FERC licenses.

# RESOURCE PRODUCTION ENHANCEMENT ALTERNATIVE

The objective of this alternative would be to continue multiple use management of BLM lands within the planning area with emphasis on promoting the development, production, and transportation of those resources that provide energy, minerals, food, timber, etc. Management decisions would be based on current policies, regulations, and the specific directions described in this alternative.

Productive utilization of resources would have priority over conservation of resources. To facilitate analysis, the resources and resource uses to be enhanced are ranked to provide guidance for the multiple use mix description within this alternative. Table 3-3 lists the ranked resources or resource uses as well as the nonranked program support functions addressed in this alternative. Each function in the nonranked column is discussed as appropriate in each resource writeup.

Table 3-3
RESOURCE AND
RESOURCE USE RANKING
FOR THE RESOURCE PRODUCTION
ENHANCEMENT ALTERNATIVE

| Ranking of Resource or Resource Use | Nonranked Program Support Functions |
|---|---|
| Lands and Realty Management | Lands and Realty Management |
| Rights-of-way and utility corridors | Land tenure adjustment |
| Minerals Management | Withdrawals |
| Fluid minerals | Access acquisition |
| Locatable minerals | Waterpower/Storage |
| Mineral materials | Areas of Special Concern |
| Livestock Grazing Management | Economic Condition & Social Environment |
| Forest and Woodland Management | |
| Recreation Management | |
| Off-highway vehicle | |
| Wildlife Habitat Management | |
| Visual Resources Management | |
| Riparian Resources Management | |
| Paleontological Resources | |
| Historical Resources | |
| Archaeological Resources | |
| Special Plant and Animal Species | |

## Minerals Management

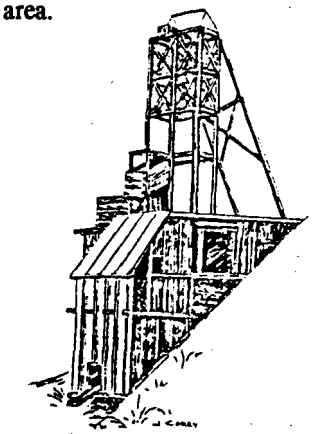
Federal oil, gas, and geothermal estate on 617,251 acres or 99.5 percent of BLM land or mineral estate would be open to leasing with 597,646 acres open with standard lease terms.

Seasonal limitations would be placed on 6,260 acres of crucial bighorn sheep lambing range from December 15 through March 31. Waterfowl habitat would be seasonally limited on 7,750 acres from February 15 to July 1. Total seasonal limitations would involve approximately 14,010 acres.

A no surface occupancy (NSO) leasing limitation would be placed on 4,395 acres within the Rio Grande River Corridor Special Recreation Management Area (SRMA) and 1,200 acres within the Pike Stockade and the Monte Vista R&PP park sites. The total NSO acreage would be 5,595 acres.

Federal mineral estate on 617,571 acres (99.5 percent) would be open to entry and location. All existing mineral withdrawals would be recommended for revocation; however, 3,300 acres (.5 percent) recommended for wilderness designation would be closed to entry.

Federal mineral estate on approximately 616,476 acres (99 percent) would be available for disposal of mineral materials. The Rio Grande River SRMA would be closed to salable mineral development. Seasonal limitations could be placed on crucial bighorn sheep lambing range from December 15 through March 31. Waterfowl habitat would be seasonally limited from February 15 to July 1. Total seasonal limitations could involve approximately 14,010 acres of the planning area.



## Paleontological Resources

Paleontological resources would continue to be inventoried and appropriate protective measures developed for surface-disturbing proposals.

## Riparian Resources Management

Riparian resource management for this alternative would be similar to management discussed in the Existing Management Alternative.

## Livestock Grazing Management

The estimated 10,000 AUMs of allotted increases in forage over the life of the plan from improvements on grazing management would be used as they become available for enhancing livestock needs.

Potentially an estimated 1,500 AUMs would become available on the unallotted lands during the life of the plan. This new forage would be made available based on documented needs for livestock. This would be done after thorough forage monitoring and appropriate NEPA documentation preparation.

## Wildlife and Fish Habitat Management

Intensive management of wetlands (1,600 acres) and restoration of historic wetlands (1,175 acres) would be accomplished on the Blanca WHA as described in the updated HMP. The withdrawal on the site, however, would be terminated and other laws, regulations, and policies would be used to protect and safeguard wildlife management objectives.

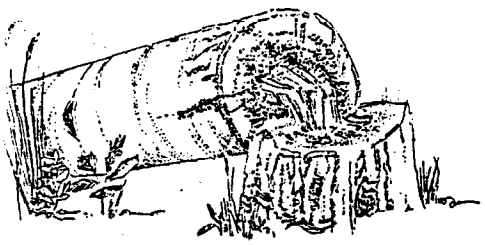
Management of the Trickle Mountain WHA (44,521 acres) would follow the existing plan, and would include limiting travel to existing roads and trails.

Seasonal limitations for all mineral development, OHV closures, and timber harvest would be used on an "as needed" basis on all crucial wildlife habitat. Big game forage allocation would remain at 48,000 AUMs. All additional forage produced would be allocated to livestock.

## Forest and Woodland Management

Operable commercial forest lands on 5,894 acres and productive operable woodlands on 10,688 acres and an additional 1,794 acres presently within WSAs would be managed for sustained-yield production. Annual harvest would be 288 Mbf of timber and 660 cords of fuelwood.

If needed, seasonal conditions would be placed on harvesting in crucial big game birthing areas. Timber management practices should conform to range management objectives.



## Lands and Realty Management

Emphasis would be on managing the majority of lands in the planning area for the development, production, and transportation of resources such as energy, timber, minerals, water, food, etc. Acquisition of lands that would enhance or facilitate the development, production, or transportation of these resources would also be emphasized. Seven potential waterpower or water storage sites were identified and should be evaluated for values that would support consideration for land acquisition and/or withdrawal.

Lands within the land tenure opportunity (LTO) areas would be Category II lands (i.e., not subject to sale, but other methods of land tenure would be considered). All other lands would be Category I lands (i.e., lands subject to sale contingent on meeting NEPA and other statutory requirements; other forms of land tenure actions such as exchange would also be allowed). See Maps 2-16 and 2-17.

All withdrawals would be recommended for termination. Existing laws, regulations, etc., would protect natural resource values.

Access to BLM lands would be acquired to enhance the utilization of production resources.

BLM lands would be open to rights-of-way for utility facilities; however, use of established utility corridors would be encouraged when facilities are proposed (see Map 2-10). The Rio Grande River Corridor SRMA (4,395 acres) would be the only area closed to major utility facilities.

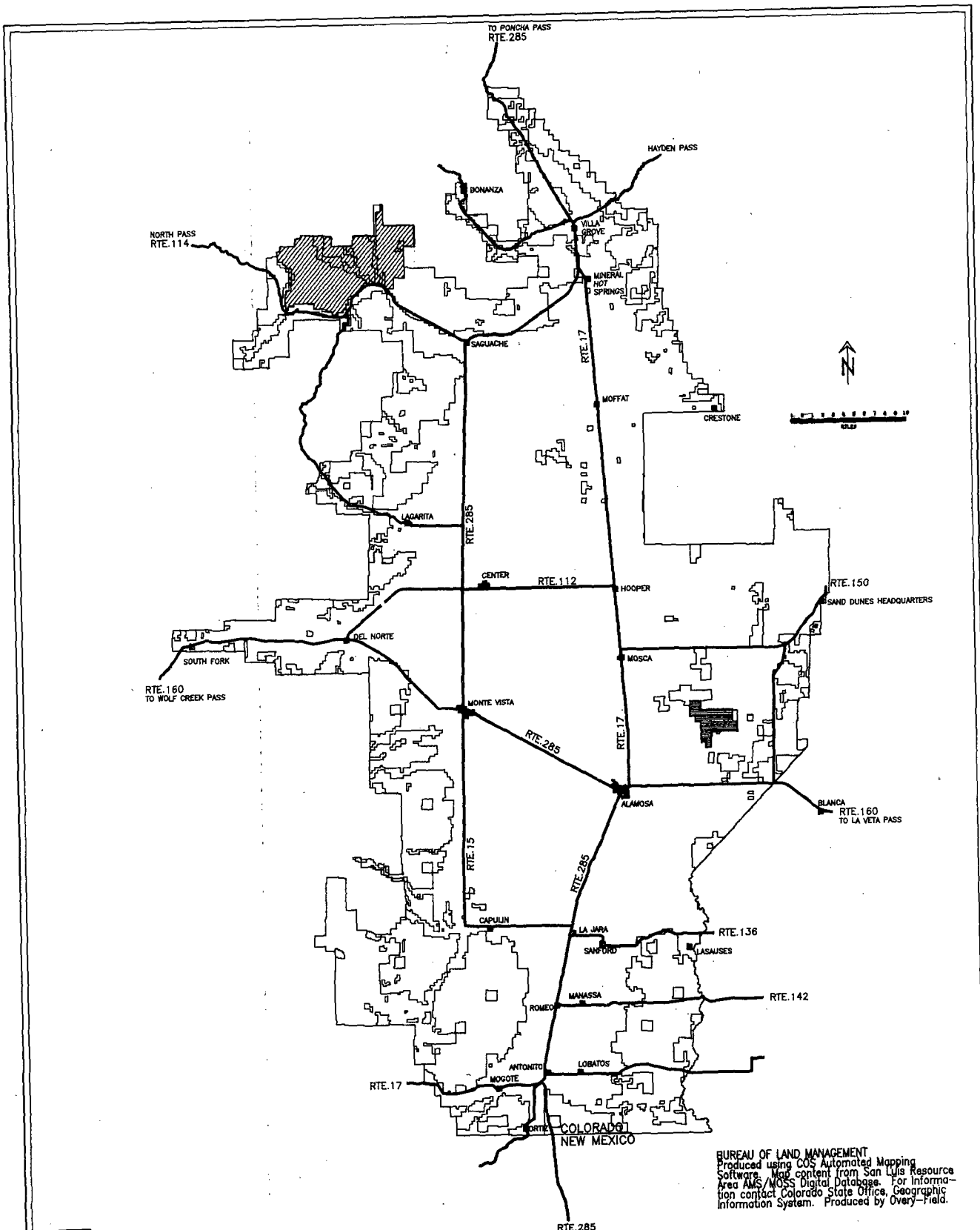
## Areas of Special Concern

Of the 22 areas nominated for potential ACECs, 10 met the criteria for relevancy and importance; however, none would be designated ACECs in this alternative. For more details on the ACEC screening process, refer to Appendix H.

The existing wildlife habitat areas, Blanca (7,750 acres) and Trickle Mountain (44,521 acres) would continue. The 21.1-mile Rio Grande River Corridor (4,395 acres) and Blanca Wildlife Habitat Area, including the Emperius tract (7,750 acres), would be designated as special recreation management areas (Map 3-7). Of the 136,984 acres nominated for special management, 56,666 acres would receive special management; 80,318 acres would not.

## Recreation Management

A total of 508,532 acres of BLM lands would be managed for extensive recreation. Blanca SRMA (7,750 acres) and the Rio Grande River Corridor SRMA (4,395 acres) would be managed for intensive recreation. There would be no areas managed as "nonmotorized" areas. Development of recreation sites would occur within the Rio Grande River Corridor. Existing sites would be maintained and recreation use would be monitored. Management emphasis for the Rio



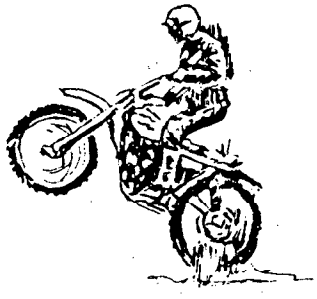

**Map 3-7**
**Areas of Special Concern (Resource Production)**

Grande River Corridor SRMA (4,395 acres) would be to enhance floatboating and fishing opportunities, hiking, camping, etc. BLM would attempt to acquire additional acreage and access acquisition in these areas. Acquisition in the Rio Grande River Corridor could be accomplished either by fee title or through easement.

Recreation objectives for the Blanca SRMA (7,750 acres) would be to enhance recreation opportunities for fishing, picnicking, waterfowl hunting, and other day-use activities. Since recreation opportunities are dependent on wildlife values, these values would be enhanced and protected.

Generally, BLM lands would be designated as open to OHV use. The exception would be that limited designations (i.e., seasonally closed or other restrictions) would be placed on crucial big horn sheep birthing areas, Blanca SRMA, Trickle Mountain WHA, and the Rio Grande River Corridor SRMA. West of the Great Sand Dunes, 3,595 acres of BLM lands would be managed as a recreational off-highway vehicle (OHV) "riding" area and would be designated "open" for OHV use. The following shows OHV designated acres of BLM land (Map 3-8):

Open 457,751 Limited 62,926 Closed 0



## Visual Resource Management

Visual resource values on BLM lands would be managed according to VRM class objectives. Certain discretionary actions such as mineral development, timber sales, etc., might not meet VRM class objectives even with mitigation. In some instances, visual mitigation could create economic impacts that could make a project not feasible. In these situations, the authorized officer would have the discretion to authorize projects even though the contrast created by an action would not meet VRM class objectives.

## Historical Resources

Management of 18 significant sites (1,180 acres) would be in accordance with Section 106 of the National Historic Preservation Act of 1966 (as amended) and other appropriate legislation. CRMPs would be required for all historic sites not considered for "discharged use."

## Archaeological Resources

Management of archaeological resources would be in accordance with the *National Historic Preservation Act* of 1966 (as amended), *Archaeological Resources Protection Act* (ARPA), other appropriate legislation, and BLM policy.

## Special Status Plant and Animal Species

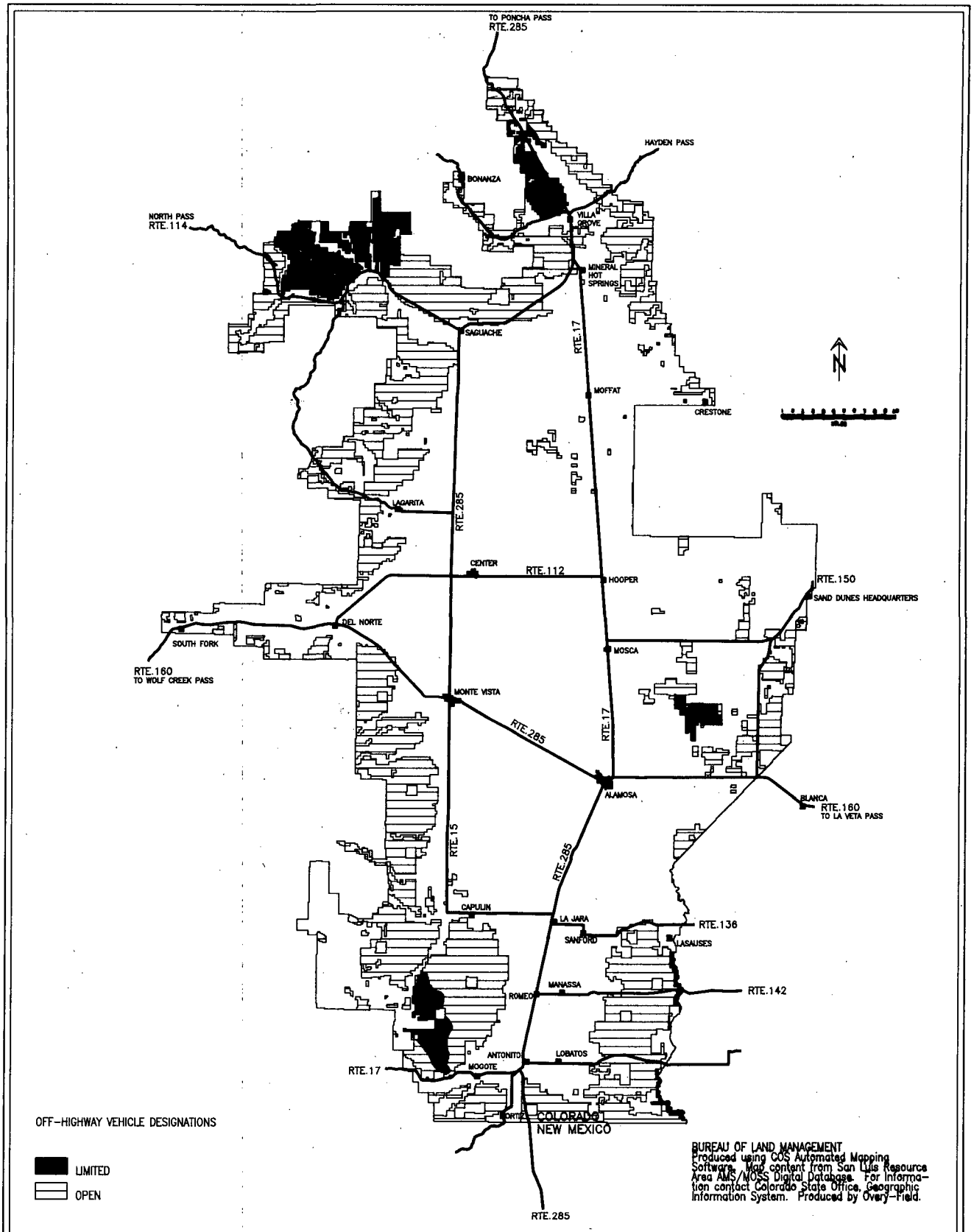
Clearances would be conducted on all sites with any proposed surface-disturbing activities, and consultation with the USFWS would be required. Measures designed to protect threatened and endangered species and habitat would be required in all land use activity plans.

## Waterpower/Storage

The waterpower or reservoir withdrawals would be recommended for termination. Those reservoir sites with withdrawn land would continue to be managed for waterpower or reservoir values, including the corridor between the Lobatos Bridge and the state line.

A systematic investigation of potential new sites would be initiated. Those areas containing potential sites would be restrictively managed for waterpower or reservoir sites.

In addition to information in "Management Guidance Common to All Alternatives," those sites not withdrawn would be evaluated, and if warranted, the area manager would pursue opportunities for acquiring the land and would recommend management that would protect the waterpower or reservoir values. Before any opportunities to acquire land are rejected, the waterpower values of any potential sites would be evaluated and weighed when considering acquisition of the land. Potential sites located on land administered by other Federal agencies would be brought to the attention of the appropriate land manager, along with information concerning their value. Sites identified for potential waterpower or reservoirs are suitable for management as waterpower or reservoir sites.




## Map 3-8
## Off-Highway Vehicle Use (Resource Production)

FOR A BETTER PERSPECTIVE OF BLM OWNERSHIP, SEE THE FOLDOUT MAP AT THE BACK OF THE PLAN.

CHAPTER 3

# PREFERRED ALTERNATIVE

The objective of this alternative would be to provide for a variety of levels, methods, and mix of multiple use resource management, utilization, and protection. Management decisions would be based on current policies, regulations, and the specific direction described in this alternative.

BLM lands and resources would continue to be managed to provide needed commodities and uses (e.g., livestock grazing, mineral materials sales, etc.) to assist in the support of local and regional economies. Generally, management practices and prescriptions would favor maintaining or enhancing the natural setting (e.g., wildlife habitat, visual resources, recreation areas, etc.). Specific emphasis would be to enhance dispersed recreation opportunities, wildlife habitats, and their related values (e.g., riparian, recreation) and uses. Necessary constraints, stipulations, and mitigating measures would be included to protect these resources from irreversible damage.

## Minerals Management

Federal oil, gas, and geothermal resources on 617,251 acres or 99.5 percent of BLM lands or mineral estate would be open to leasing. Of this total, approximately 219,291 acres would be leased with standard lease terms only (Map 3-9).

Seasonal stipulations on 376,355 acres of big game crucial winter range and eagle wintering areas would be from December 15 to March 31 of each year. Seasonal stipulations would apply from May 15 until July 1 on one antelope birthing area near Villa Grove, which overlaps big game crucial winter range. Seasonal limitations on 7,750 acres to protect waterfowl nesting in the Blanca WHA would be in effect from February 15 to July 1. Operations might be allowed in seasonally limited areas during these periods if no more than minimal disturbance to wildlife would occur. Avoidance of riparian zones would be accomplished through leasable mineral regulations. Defined riparian zones are those areas where permanent water exists. Total seasonal limitations would involve approximately 384,105 acres.

No surface occupancy (NSO) stipulations would protect approximately 2,000 acres of SPNM on the Flat Top portion of San Luis Hills ACEC; the five bighorn sheep lambing ranges (6,260 acres); 1,200 acres within the Pike Stockade/ Monte Vista park areas and the wild and scenic values, birds of prey values, visual values, etc., in the Rio Grande River Corridor (4,395 acres), which includes 1,760 acres recommended for wild and scenic designation. Total NSO acres would be 13,855.

Federal mineral estate on approximately 605,921 (98 percent) would be open to entry and location. Mineral entry would be precluded on 3,300 acres of WSAs recommended for wilderness designation, 1,200 acres within the Pike Stockade/Monte Vista park sites, 200 acres of U.S. Forest Service administrative sites, 7,750 acres of Blanca Wildlife Habitat Area, 740 acres of eligible NRHP sites, and 1,760 acres within the Rio Grande Wild and Scenic River proposal. The total acreage precluded would be 14,950 (2 percent). Additionally, plans of operation for mineral development would be required in all ACECs and 2,000 acres of closed OHV lands.

Federal mineral estate would be open on 601,162 acres (97 percent) and would be available for disposal of mineral materials except in the following areas (19,709 acres or 3 percent) where serious disruption would most likely occur to resource values: (1) Rio Grande River Special Recreation Management Area, which includes the 1,760 acres of proposed wild and scenic designation (recreational and wildlife); (2) Cumbres and Toltec Scenic Railroad ACEC (scenic, recreational, historical, visual); (3) riparian zones (wildlife and watershed); (4) Flat Top portion of the San Luis Hills ACEC (recreational, wildlife, special plants and animals); and (5) five sheep lambing areas.

If necessary, seasonal limitations could be incorporated into authorizations in waterfowl nesting areas. An area-wide mineral materials needs and resource analysis would be completed to establish and centralize common use areas and community pits. Total seasonal limitations could involve 384,105 acres of the planning area.

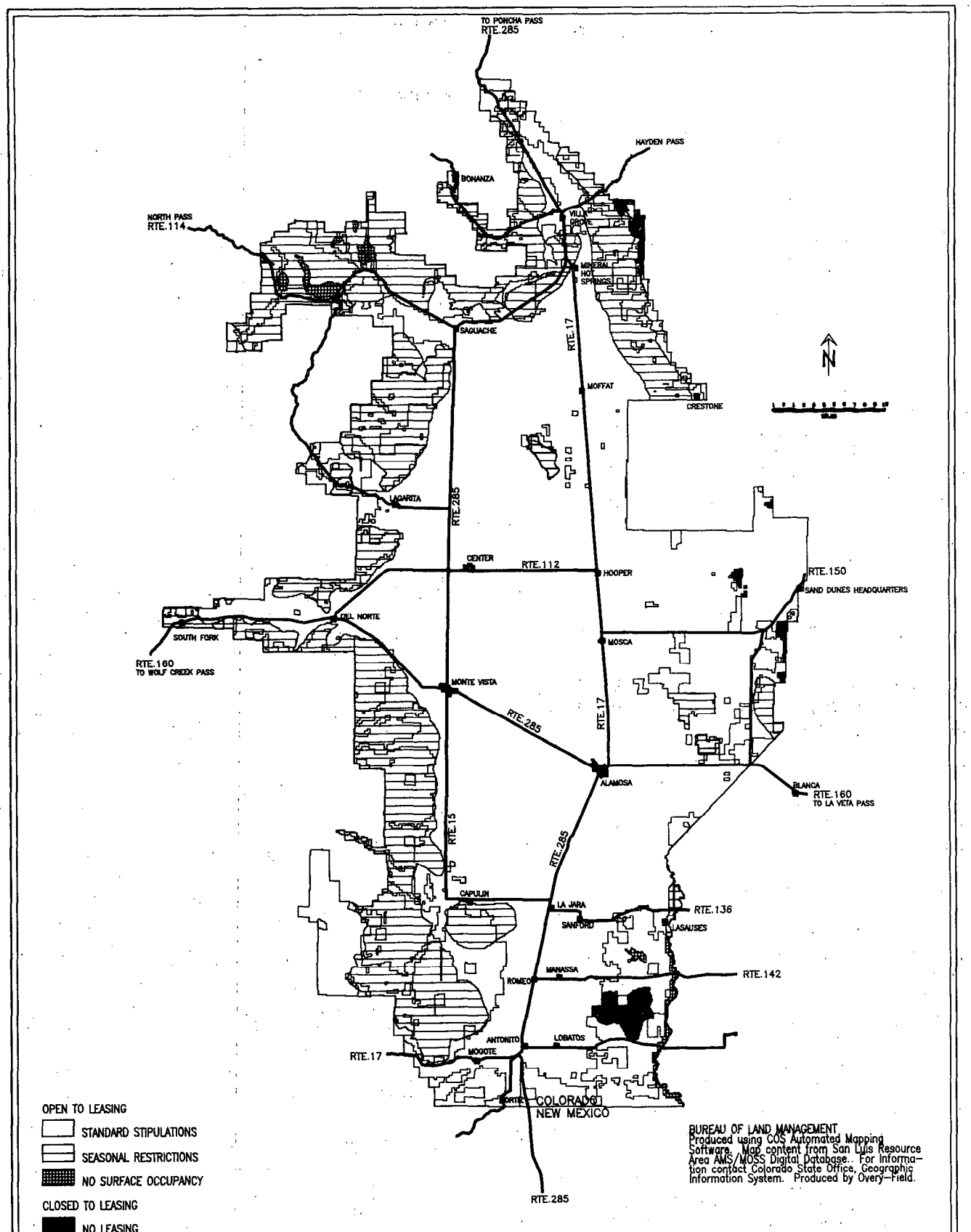
## Paleontological Resources

Paleontological resources would continue to be inventoried and appropriate protective measures/stipulations would be developed for surface-disturbing proposals. A collection area for invertebrate fossils near Clayton Cone would be identified and coordinated with the recreation program.

## Riparian Resources Management

The following special protection and enhancement measures would be used to maintain approximately 1,400 acres of riparian zones in good to excellent condition and to improve condition on 400 acres.

Protection measures would include allowing rights-of-way and utility corridors adjacent to (but not within) riparian



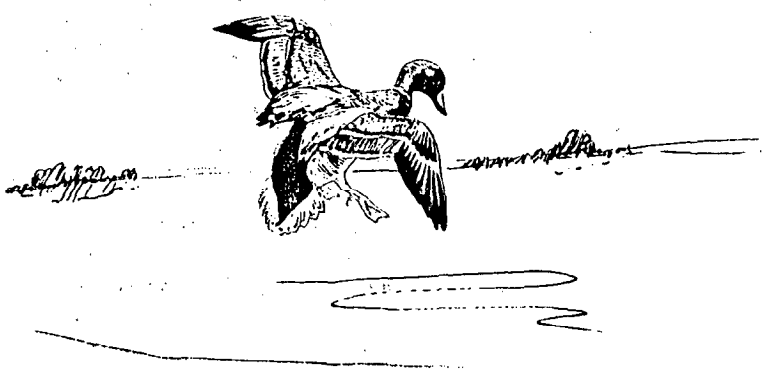

FOR A BETTER PERSPECTIVE OF BLM OWNERSHIP, SEE THE FOLDOUT MAP AT THE BACK OF THE PLAN.

## Map 3-9
## Fluid Mineral Leasing Decisions (Preferred)

areas or across these areas when mitigation would result in no more than minimal disturbance. These measures would also include no sale provisions for mineral materials and limited OHV designations in riparian zones.

Enhancement measures include increased emphasis on the acquisition program; no disposal of riparian areas except through land exchanges; and modification of allotment management plans (AMPs). Also management of the riparian resources in the Blanca WHA (and Emperius tract) would continue with primary emphasis on wetlands management and waterfowl production.

An inventory would be completed on an additional 1,413 acres with potential riparian values, and a riparian demonstration project on Ford Creek would be continued.



## Livestock Grazing Management

An estimated increase of 10,000 AUMs of forage production would occur from improvements on grazing management after monitoring studies fully substantiate the availability of these increases on a long-term basis. Increases would then be allocated on a 60/40 basis. This would provide for nonlivestock uses and needs (e.g., wildlife, riparian, watershed, soils, etc.) receiving 60 percent, if needed, or about 6,000 AUMs to support these uses/needs and to ensure a sound, permanently available ecological base on BLM land. The remaining 40 percent increase in forage production (about 4,000 AUMs) would be allocated to livestock grazing management. This would provide the livestock operator a long-term basis incentive to move forward with AMP objectives and the improvements to meet those objectives.

Potentially an estimated 1,500 AUMs would become available on the unallotted lands during the life of the plan. This new forage would be allocated on an a 40/60 basis for livestock or nonlivestock use. This would be done after thorough forage monitoring and preparation of appropriate NEPA documentation.

Also appropriate methods (modifying AMPs, fencing, changing seasons of use, changing type of livestock, etc.) would be taken to accomplish the following:

1. Enhance riparian values in applicable allotments through proper livestock management.

2. Ensure enhancement of wildlife values in the Los Mogotes and Trickle Mountain ACECs.

3. Ensure that livestock use would be appropriately managed to enhance the affected habitat where special status plants and animals are present.

4. Ensure that other RMP objectives would be met in other allotments.

## Wildlife and Fish Habitat Management

Intensive management of wetlands for waterfowl production in the Blanca WHA, including the Emperius tract, would maintain 1,600 acres and an additional 1,175 acres of historical wetlands would be restored in this WHA. Seasonal use limitations would be placed on 7,750 acres of water bird nesting habitat associated with these areas of wetlands. Cooperative agreements would be pursued with other state and Federal agencies and other interested individuals.

Management would restore the present 155 acres of wetlands in the Flat Top, Mishak Lakes, and Dry Lakes areas to the 580 acres of wetlands. Cooperative agreements would be pursued with other state and Federal agencies and other interested individuals. Limits or criteria for timber operations would be set.

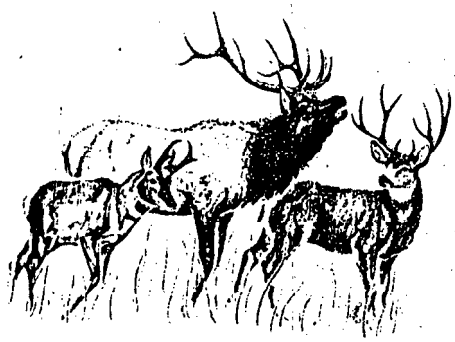
The allocation of 60 percent of all additional forage to nonlivestock use, if needed, would improve nongame habitat and availability of big game forage on all acreage where additional forage is produced. Crucial winter ranges would be managed to provide forage for 17,600 wintering big game animals.

Crucial winter and birthing habitats would be priority objectives in the CRMAPS for Los Mogotes and Trickle Mountain ACECs.

Protective measures would include NSO, no sale stipulations, seasonal limitations, and seasonal closures. NSO and no sale stipulations for mineral development would apply in five bighorn sheep lambing ranges (6,260 acres) and raptor nesting areas along the Rio Grande River Corridor (4,395 acres), which includes 1,760 acres recommended for wild and scenic river designation. Seasonal limitations for leasable minerals and OHV use would be placed on crucial big game winter range and the antelope birthing area south of Villa Grove (376,355 total acres). Seasonal limitations would also be placed on timber cutting in bighorn sheep lambing range (6,260 acres).

Access would be allowed during seasonal closures only on identified road corridors to adjacent forest service, private, and state land. Corridors would be identified and designated at the time the support services management plan (SSMP) is updated to incorporate OHV designations. The Trickle Mountain ACEC (44,521 acres) would have seasonal OHV closures, and all travel at other times would be limited to designated roads and trails. Construction activities for management actions would be allowed at times of the year compatible with wildlife.

Harvest of productive forest lands and operable woodlands would be required to meet crucial thermal and cover requirements for wildlife. Wildlife impact analysis for proposed timber sales should consider not only BLM lands, but also adjacent U.S. Forest Service lands with approved prescriptions in the Rio Grande Forest Management Plan. Small timber operations (i.e., 80 acres or less) would be allowed during the winter months provided that only minimal impacts to wintering big game herds occur.



## Forest and Woodland Management

Operable commercial forest lands on 5,769 acres and productive operable woodlands on 11,992 acres would be managed for sustained-yield production. Annual harvest would be 288 Mbf and 633 cords of fuelwood.

Harvest of productive forest lands and operable woodlands would meet crucial thermal and cover requirements for wildlife. There would be seasonal closures to timber cutting in five sheep lambing areas (6,260 acres). Small timber operations (i.e., 80 acres or less) would be allowed during the winter months provided there would be only minimal impacts to wintering big game herds. The impact analysis for proposed timber sales would consider not only BLM lands, but also adjacent USFS lands with approved prescriptions in the Rio Grande Forest Management Plan. Harvesting would be allowed in ACECs if consistent with CRMAP/RMP objectives.

## Lands and Realty Management

Emphasis would be to retain and manage the majority of land in the planning area and acquire other suitable lands for enhancement of wildlife and recreation values through exchange (see Maps 2-16 and 2-17). Priority criteria for acquisitions are: (1) riparian (e.g., wetlands, perennial streams, etc.); (2) habitat for special animal species and areas with special plant species; (3) recreation use sites adjacent to water areas; (4) wildlife habitat;(5) access; and (6) lands to improve overall manageability. Exchanges would be pursued according to the following priority: (1) Federal/ state resource management agencies; (2) communities/ counties; (3) State Land Board; and (4) private entities.

Identified Category I lands (i.e., lands subject to sale contingent to meeting NEPA and other statutory requirements; other forms of land tenure actions such as exchange would also be allowed) are those outside of the LTO lands, Mishak Lake, Hopper, and Del Norte West areas.

Acquisition in the Del Norte West and Bonanza areas would not be considered.

Disposal of lands within the San Luis Lake area would occur through boundary adjustment with the NPS, Colorado Division of Parks and Outdoor Recreation, or as an exchange with local landowners, which would consolidate the BLM lands and also serve as a buffer to the NPS.

Disposal of lands within the Mishak Lakes area would be only to the Colorado Division of Wildlife or the U.S. Fish and Wildlife Service.

Existing withdrawals would be retained. The potential waterpower site withdrawal on the lower 8.8 miles of the Rio Grande Wild and Scenic River would be terminated if the designation is approved by Congress. New withdrawals would be recommended to protect the wild and scenic river values (1,760 acres) and the six NRHP sites (740 acres).

The following criteria would be used to establish priority for access:

1. Easements that would jointly benefit BLM and other resource agency programs.

2. Access needs identified in the coordinated resource management activity plan (CRMAP).

3. Scenic/recreational easements along the Rio Grande corridor for recreation, wildlife, riparian, and other resource values.

4. Other access needs based on the following: resource values (quantity, and quality); potential for closure to the public; resource conflict mitigation; public demand and BLM administrative needs; configuration (size, shape and amount of public land); proximity to population centers; and proximity to major travel routes.

Utility corridor routes, identified by the Western Utility Group (WUG) and included in the Rio Grande Forest Plan, would be adopted with the following exceptions (Map 3-10).

1. No utility corridor from Poncha Pass west to Middle Creek (near Saguache) to Del Norte. This area has many acres of crucial winter wildlife habitat, is highly scenic, and is an important dispersed recreational area.

2. No utility corridor on public lands within the Rio Grande River Corridor and west to Flat Top and Pinon Hills. This area is increasing in recreational importance and the scenic values are an important element to the recreational experience. The Taos 345 kV powerline EIS and record of decision approving this project would remain in effect and would not be altered in this alternative. Any additional proposals like this powerline would be analyzed on a case-by-case basis to ensure that minimal consequences would occur to this area.

3. All major corridors would avoid the Blanca WHA/SRMA. This valuable wetlands area receives significant recreation use; therefore, the visual resource is important to this area.

4. No utility corridor is identified in the Conejos Canyon area west of Antonito in the SLRMP, Rio Grand Forest Plan, or WUG because it does not meet criteria for corridor designation (over 69 kV line).

Major ROWs within riparian zones would not be permitted. Impacts from ROWs adjacent to or across riparian areas must be mitigated. Maximum utilization of existing ROWs would be promoted, including joint use when possible.

All other BLM lands would be open to rights-of-way for minor utility lines and roads. Each would be evaluated on a case-by-case basis for alignment and mitigation stipulations.

## Areas of Special Concern

Of the 22 areas nominated for potential ACECs, 10 met the criteria for relevancy and importance; however, 6 would be designated. Two of the original areas (San Luis Hills and Flat Top) were combined into one ACEC.

One area (Blanca) would be managed as a WHA/SRMA. A total of 119,052 acres would be considered as areas of special concern (Map 3-11).

1. Sand Castle ACEC: This designation would encompass approximately 3,595 acres, which previously included the Cattleguard Folsom site and Sand Castle WSA area. There are several competing demands for the lands within this area, and potential resource conflicts need to be addressed on a site-specific basis in a CRMAP. Provisions that cultural resources would be initially inventoried and subsequently mitigated would also be included in the CRMAP.

2. San Luis Hills ACEC: This designation would provide protection of the significant natural values on approximately 29,261 acres, which combines and modifies the San Luis and Flat Top sites.

3. Blanca WHA/SRMA: This designation encompasses approximately 7,750 acres (including the Emperius tract) that would be managed as a wildlife habitat management area with a strong emphasis on public recreation opportunities. The recreation objectives would conform to the existing site-specific guidance within the Blanca HMP.

4. Trickle Mountain ACEC/WHA: This designation encompasses approximately 44,521 acres with existing OHV limitations that includes the Ford Creek Riparian Area and existing WHA. The designation would protect unique wildlife values (multiple overlapping and intensive big game winter use) and other significant natural values.

5. Rio Grande Corridor ACEC/SRMA: This designation would protect the significant natural/scenic values and potential recreational opportunities along a 21.1-mile river corridor north of the New Mexico border to the Lasauses cemetery (approximately 4,395 acres). A portion of this corridor (8.8 miles or approximately 1,760 acres) is recommended for inclusion in the National Wild and Scenic River System. Refer to the river study report in Appendix E for more details.

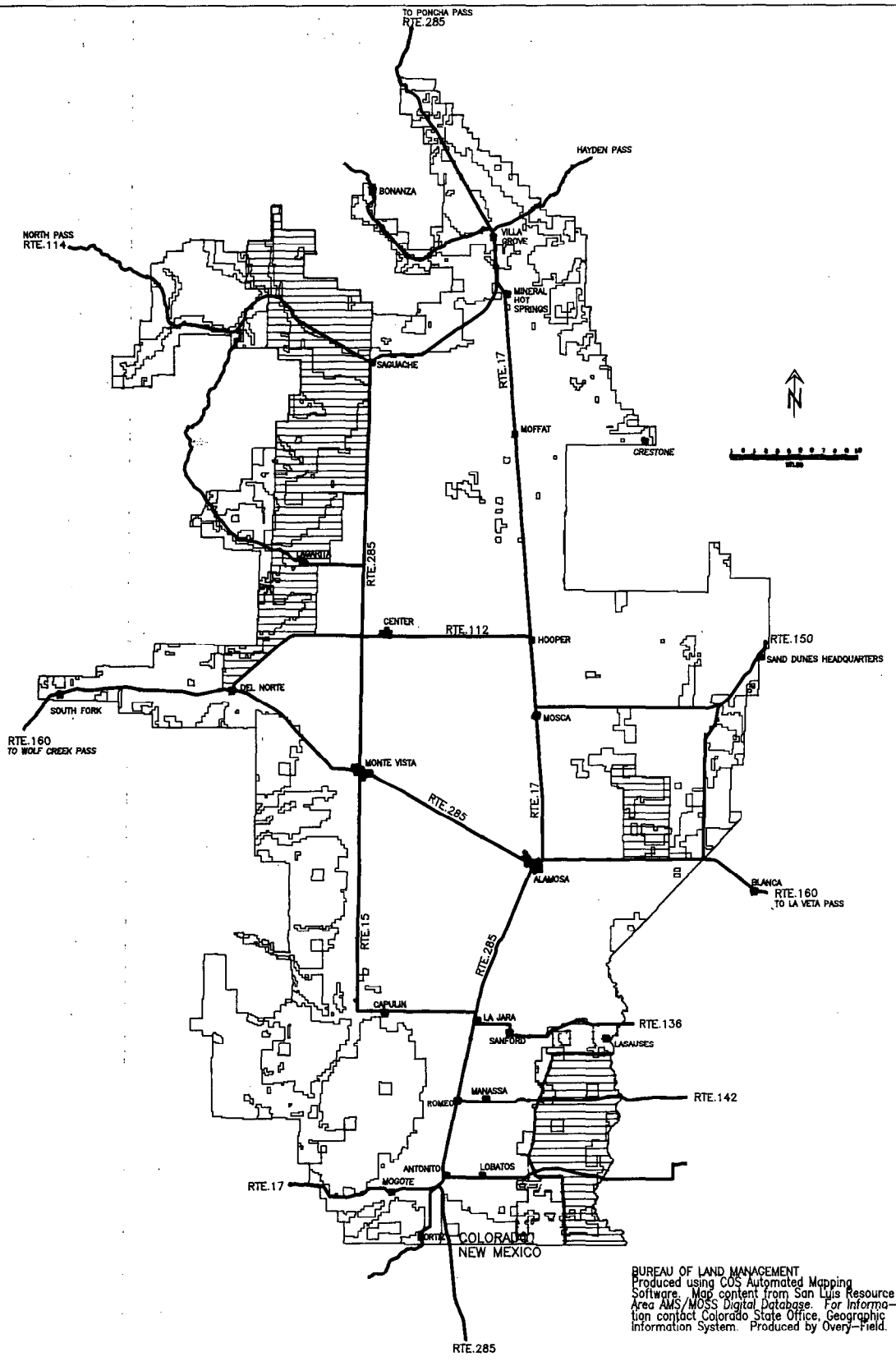
6. Cumbres and Toltec Scenic Railroad ACEC: This designation would provide for the minimum foreground viewshed area (approximately 3,824 acres) needed to protect the unique scenic resources as viewed from the train. This protection would be described in the CRMAP.

7. Los Mogotes ACEC: This designation would provide protection for wildlife habitat on approximately 33,456 acres and would be described in the CRMAP. Seasonally limited development of the cinder resources during the winter months would also be included in the CRMAP.

Of the 136,984 acres nominated for special management, 126,802 acres would receive special management; 10,182 acres would not.

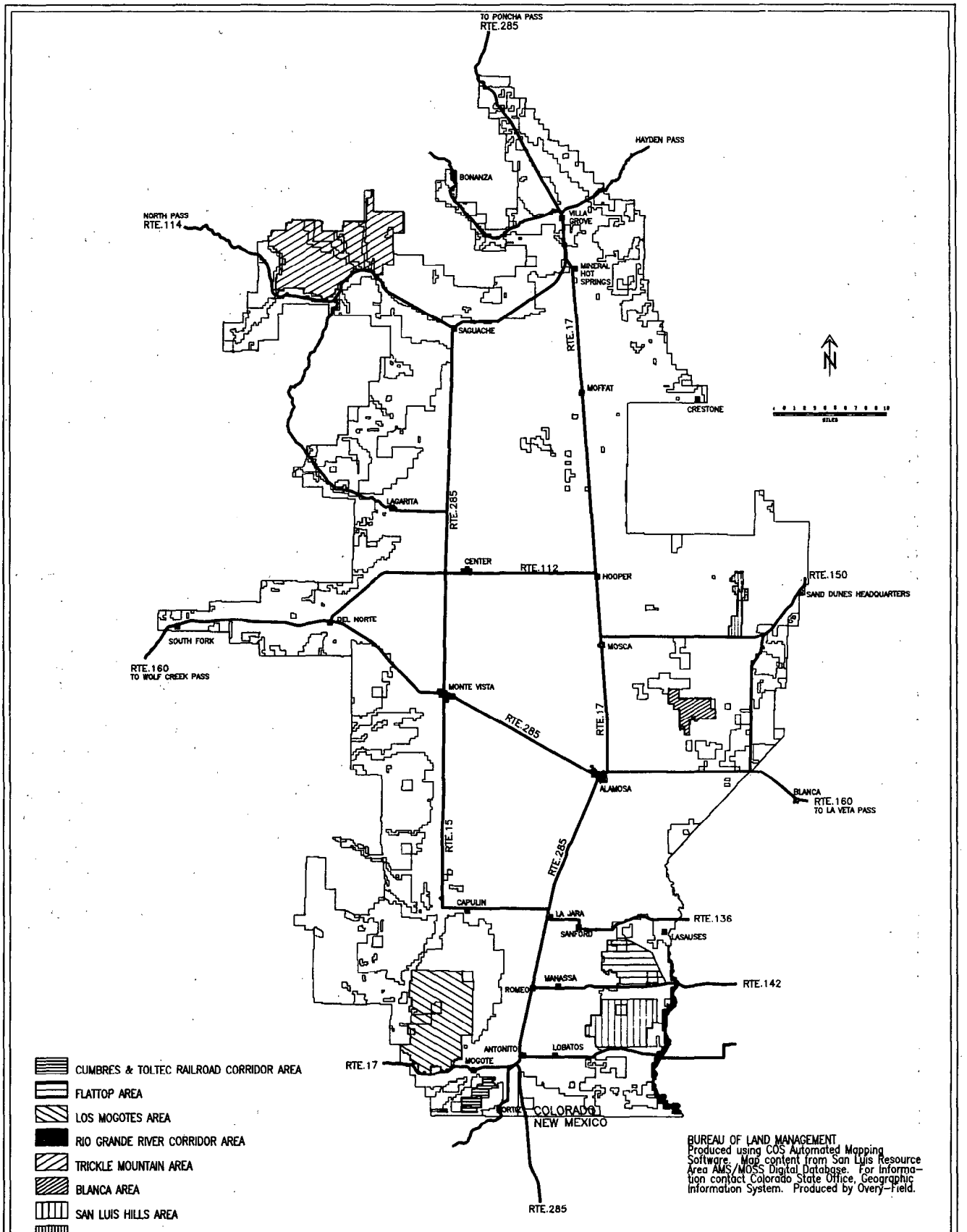
## Recreation Management

A total of 508,532 acres of BLM lands would be managed for extensive recreation. Blanca SRMA (7,750 acres) and Rio Grande River Corridor SRMA (4,395 acres) would be managed for intensive recreation (total of 12,145 acres). Development of recreation sites would occur within the




FOR A BETTER PERSPECTIVE OF BLM OWNERSHIP, SEE THE FOLDOUT MAP AT THE BACK OF THE PLAN.

## Map 3-10
## Utility Corridor Exception Areas (Preferred)




## Map 3-11
## Areas of Special Concern (Preferred)

FOR A BETTER PERSPECTIVE OF BLM OWNERSHIP, SEE THE FOLDOUT MAP AT THE BACK OF THE PLAN.

Rio Grande River Corridor. This development would occur in Segments a and B and the upper 2 miles of the 8.8-mile segment of the wild and scenic river proposal. Existing sites would be maintained and recreation use would be monitored.

The Rio Grande River Corridor and Blanca Wildlife Habitat Area (12,145 acres) would be designated as special recreation management areas. Management emphasis on the Rio Grande River Corridor SRMA would be to enhance floatboating, fishing, and other recreation opportunities. BLM would acquire additional acreage and access in these areas. Acquisition within the Rio Grande River Corridor could be accomplished either by fee title or through easement.

Recreation objectives for the Blanca SRMA would be to enhance opportunities for fishing, picnicking, waterfowl hunting, and other day-use recreation. Since recreation opportunities are dependent on wildlife values, these values would be enhanced and protected.

The majority of BLM land in the planning area would be designated as open or open with limitations to vehicular travel. This includes the area north of Raton Creek to Del Norte; however, the public would be encouraged through an awareness program to stay on roads to protect environmental values.

The only areas closed to vehicular travel would be the Flat Top portion of the San Luis Hills ACEC (2,000 acres), the wild and scenic segment of the Rio Grande River Corridor (1,760 acres), and the recommended wilderness areas (3,300 acres). Limited OHV designations (seasonal limitations) would be placed on crucial big game winter and birthing areas. Designated corridors that lead to U.S. Forest Service, state, and private lands would be identified in the SSMP for use during the limited period. Limited OHV designations (seasonal limitations and travel limited to designated roads) on the following areas would be established on the following areas: Trickle Mountain ACEC; Blanca Wildlife Habitat Area/SRMA; Cumbres and Toltec Scenic Railroad corridor area; Sand Castle ACEC, San Luis Hills ACEC, and riparian areas. Travel within the Sand Castle ACEC would be limited to areas identified in the CRMAP, which would also determine if portions of the area could be managed as an OHV riding area. The following shows OHV designations by acres (Map 3-12):

Open: 127,307 Limited: 386,310 Closed: 7,060

Public awareness and public interpretative programs would be developed to include resource values, information, signing, etc., for cultural, wildlife, recreation opportunities. This effort would primarily be a recreation program, but cooperation from the other resources would be needed.

## Visual Resource Management

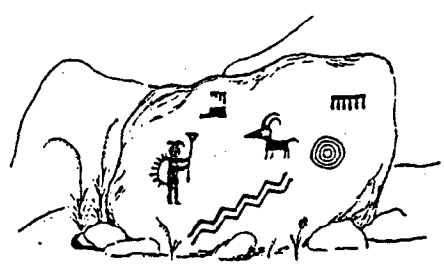
Visual resource values on public lands (Map 3-13) would conform to current VRM class objectives except for public lands to the west of U.S. Highway 285, which would be managed according to VRM Class III objectives to allow for a major utility corridor.

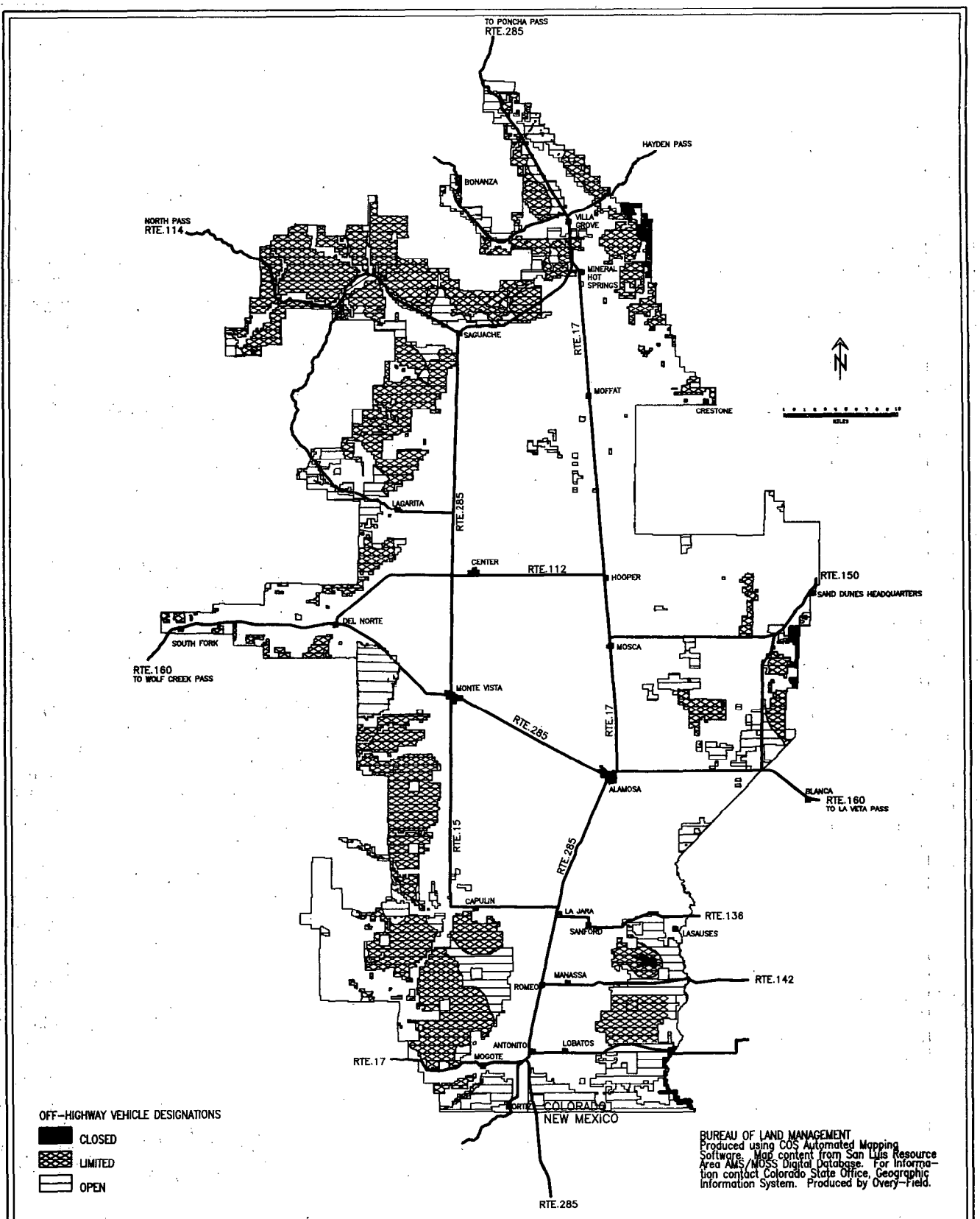
Strict conformance to VRM Class objectives would occur in two important scenic areas: Cumbres and Toltec Scenic Railroad ACEC and Rio Grande River Corridor ACEC/ SRMA foreground viewshed zone, which includes the proposed wild and scenic river segment. An effort would be made to rehabilitate the Blanca Peak chaining to meet a class III objective.

## Historical Resources

All 18 significant historical sites on BLM lands would be protected from adverse impacts of other resources. Five eligible national register sites (560 acres) would be proposed for protection: e.g., remain in public ownership, closed to OHV, withdrawn from mineral entry, leased with NSO stipulation, limited access for administrative use, etc. CRMPs would be prepared for these five significant sites, and they would be available for the following use categories: "scientific use," "public use," and "management use." Thirteen sites (620 acres) not eligible for the National Register of Historic Places would be managed according to policy in the BLM 8100 Manual and would be addressed in a valley-wide CRMP.

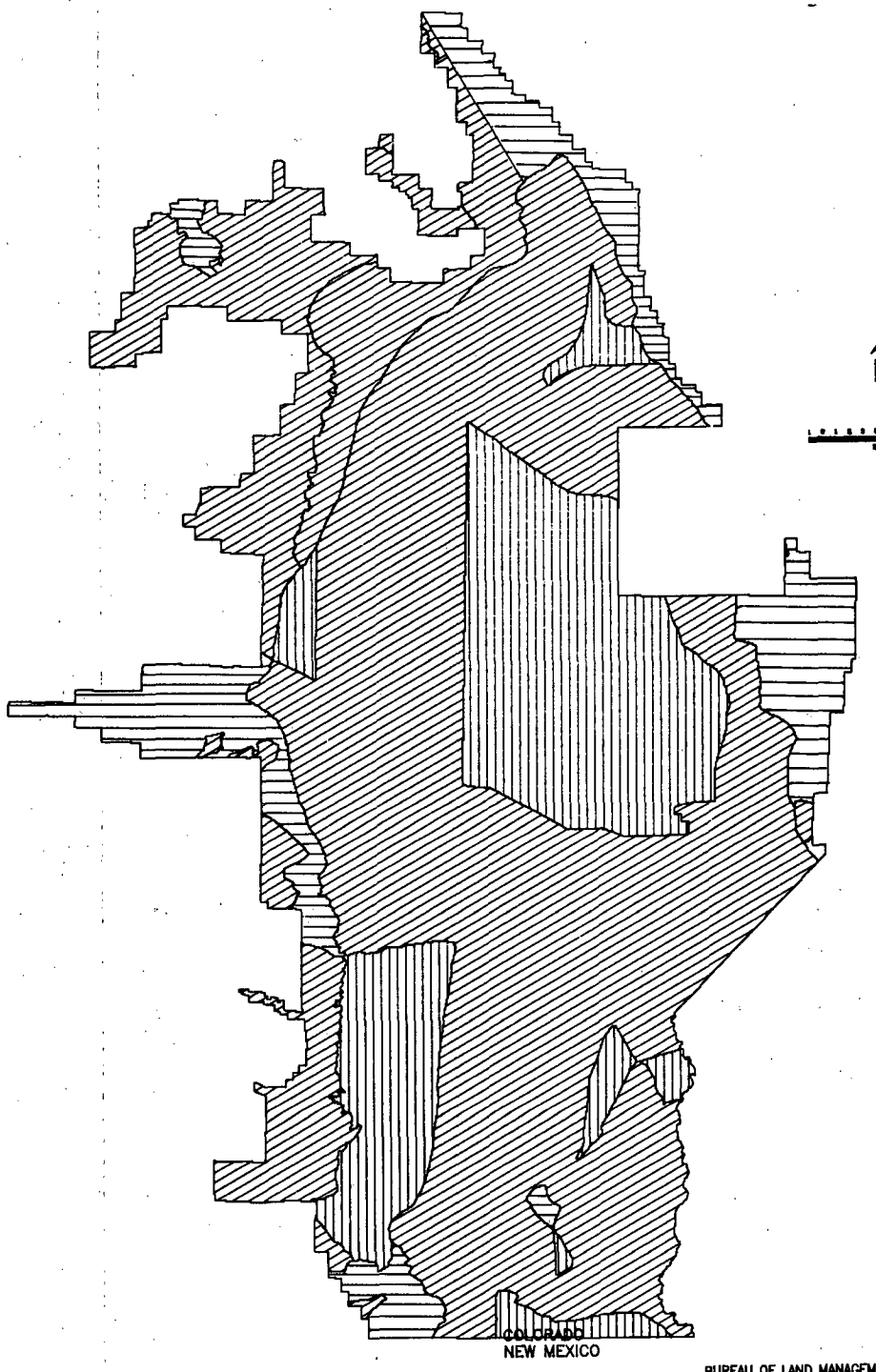
In addition, special emphasis to protect historical values would be given to the Cumbres and Toltec Scenic Railroad (ACEC designation, salable mineral activity restriction, and special VRM protection).






## Map 3-12
## Off-Highway Vehicle Use (Preferred)

FOR A BETTER PERSPECTIVE OF BLM OWNERSHIP, SEE THE FOLDOUT MAP AT THE BACK OF THE PLAN.




**Map 3-13**
**Visual Resource Management Classes (Preferred)**

## Archaeological Resources

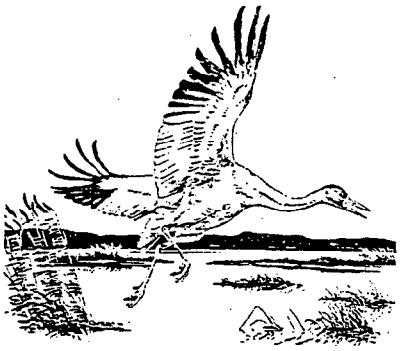
All archaeological sites determined to be significant would be protected from adverse impacts of other resources. Those sites eligible for inclusion on the National Register and those areas determined to qualify as a national district would be proposed for protection in accordance with an area-wide CRMP. These sites/areas would be available for management within the appropriate use categories set forth in BLM Manual 8100. Noneligible sites would be managed according to the same authority. Areas remaining to be inventoried would be treated systematically as addressed by the CRMP and 8100 manual.

Special emphasis would be given to protect archaeological resources in the Sand Castle/Cattleguard Folsom area, which likely qualifies as a national district, and the Punche Valley, which likely qualifies as a noncontiguous district. Selected parts of these areas would be available for public education and scientific purposes. Fragile and sensitive areas such as the Dry Creek Rock Art would be treated by a specific CRMP.

Sand Castle (ACEC designation and CRMAP would contain provisions that the cultural resources be inventoried and impacts subsequently mitigated before allowing intensive OHV recreational use).

## Special Status Plant and Animal Species

Management actions would be considered to change the stressed state to enhance, recover, or re-establish these special resources. These special plants and animals would be specifically addressed in the Trickle Mountain ACEC/ WHA, Los Mogotes ACEC, Rio Grande River Corridor ACEC/SRMA (which includes the proposed wild and scenic segment), and San Luis Hills ACEC coordinated resource management activity plans (CRMAPs). Clearances would be conducted for all proposed surface-disturbing actions and the U.S. Fish and Wildlife Service would be consulted as required. To protect threatened and endangered species and habitat, appropriate required measures would be included in all CRMAPs.



## Waterpower/Storage

Maintenance of the physical potential for the development of waterpower/ storage sites would continue, with the exception of the waterpower storage site on the Rio Grande River near the Colorado/New Mexico State line. Termination of the withdrawal on this site is proposed because of the recommended designation of the wild and scenic river segment in Colorado (8.8 miles of canyon). This would occur when Congress acts on the recommendation in the RMP.

In addition to information in "Management Guidance Common to all Alternatives," those sites not withdrawn would be evaluated, and if warranted, the area manager would pursue opportunities for acquiring the land and recommend any affected land for withdrawal. Before any opportunities to acquire land are rejected, the waterpower/ storage values of any potential sites would be evaluated and weighed when considering acquisition of the land.

Stipulations would be developed for inclusion in FERC licenses to mitigate other resources in areas where other resources are in conflict with undeveloped sites.

# COMPARISON OF ALTERNATIVES

A comparison of alternatives is shown in the Summary on Table S-1.

# CHAPTER 4

# ENVIRONMENTAL CONSEQUENCES

# CHAPTER 4

# ENVIRONMENTAL CONSEQUENCES

Chapter 4 describes the physical, biological, social, and economic consequences of implementing the resource management alternatives described in chapter 3. Only those resources or resource uses are discussed that would be significantly affected as a result of implementation of the proposed management actions of the various alternatives.

Both adverse and beneficial impacts, based on the effects of the alternative management actions, were analyzed. The impact analysis reflects the consequences or results of these alternative actions (described in detail in chapter 3) on the affected environment (described in detail in chapter 2).

Mitigating measures designed to avoid or reduce the environmental impacts were incorporated into the various alternative management actions. Impacts identified in this chapter are considered unavoidable net effects based on these prescribed mitigation measures.

Chapter 4 describes those assumptions made for the analysis, provides an analysis of the environmental consequences or impacts that would result from implementing each alternative, and compares and summarizes the cumulative impacts for each resource and resource use by alternative.

## ASSUMPTIONS FOR ANALYSIS

An interdisciplinary approach was used to develop and analyze environmental consequences. The general assumptions and guidelines used to define the process include:

### General Assumptions

It is assumed that implementing actions from decisions made in all alternatives within this resource management plan (RMP) would be in compliance with all valid existing rights, Federal regulations, Bureau policies, and other requirements.

It is assumed that implementation of the approved resource management plan (ARMP) would begin 30 days after the ARMP and record of decision (ROD) are signed by the state director and that all implementation actions would subsequently conform to the specific ARMP decisions.

The life of the plan is assumed to be approximately 15 to 20 years. Changes or effects described during the life of the plan would be short term unless otherwise stated and would occur during or immediately following implementation of an action. Short-term impacts would occur within the 5-year period immediately following implementation; long-term impacts would occur over a 5- to 20-year period, or longer.

Each alternative is analyzed assuming adequate finances and personnel would be available to implement the decisions of the plan.

It is assumed that only significant changes or effects, which vary by resource, resource use, and alternative, are analyzed. Also, those actions with significant changes or effects that would subsequently be fully mitigated by existing Bureau and Bureau-adopted stipulations would not need to be analyzed. It is also assumed that there would be no net adverse unavoidable change or effect.

Effects, for the purpose of this analysis, are the net unavoidable changes, impacts, etc., to a resource or resource use after mitigation.

The stated net unavoidable effects would be monitored and continually evaluated during the life of the plan. Where necessary, adjustments in the actions would be made to achieve the minimum level possible of consequential effects based on the data from plan action monitoring.

Effects from actions not covered in this plan or accompanying documents would be analyzed as needed through plan amendments/environmental assessments or environmental impact statements. This additional analysis would be done in accordance with Bureau planning/environmental guidance prior to BLM consideration for approval of that action.

Resources and resource uses (including those within the Rio Grande River wild and scenic proposal) with insignificant net unavoidable effects in all alternatives are analyzed in the management common to all alternatives section of chapter 3 and are not addressed further in this chapter. Those resources or resource uses include: Climate, Air Quality, Soils, Water Resources, Geology and Topography, Vegetation, Access and Transportation Management, Wilderness Management, Fire Management, and Hazards Management. The four environmental elements that would be affected by wild and scenic river designation and all other resources and resource uses are analyzed in this chapter.

## Minerals Management

The reasonably foreseeable level of fluid mineral operations per year within the planning area would involve 3 to 10 applications for permit to drill (APDs) and 3 to 7 notices of intent (NOIs) to conduct geophysical operations. This level of fluid mineral activities represents an estimated maximum disturbance of about 40 acres per year. More information is included in the Oil and Gas/Geothermal Tech Report.

Wilderness study areas (WSAs) would be closed to oil and gas leasing pending a final determination by Congress. It is assumed for this planning analysis that all WSA lands except the 3,300 acres adjacent to USFS would be returned to multiple use and open to leasing in conformance with the resource decisions in this plan.

Geophysical exploration operations would be subject to relatively the same management decisions and subsequent effects as identified for fluid mineral leasing and development.

Although existing fluid mineral leases would not be modified by the decisions of this plan during the term of each lease, lessees and operators would be encouraged to voluntarily comply with such requirements if and when operations are conducted.

An area-wide mineral materials needs and resource analysis would be completed to establish and centralize common use areas and community pits.

It is assumed that all mineral rights would be retained on BLM lands identified for disposal. Disposal of BLM lands with low-value minerals could potentially create a split-estate situation; i.e., surface estate separated from the subsurface minerals. Exploration and development in these areas could cause some additional operational requirements; however, because of the assumed low-mineral values, the effect would be insignificant.

## Paleontological Resources

Under current circumstances, paleontological resources would continue to deteriorate through natural forces, damaging public visitation, and vandalism if no corrective nor preventive action is taken. Assuming full completion of compliance and implementation of the laws, regulations, and Bureau policy before beginning any actions resulting from ARMP decisions, there would still be a net adverse effect to this resource.

## Riparian Resources Management

Riparian resource management would continue to improve within the planning area. It is assumed that full compliance with and implementation of the new Bureau guidance to maintain and/or improve current conditions in riparian zones would significantly and positively affect this resource. Prior to implementation, all actions within riparian zones would be assessed for their effects on the resource and would be fully mitigated if negative effects occur.

## Livestock Grazing Management

It is assumed that current trends in livestock market conditions in the planning area would continue for the life of the plan. Livestock values would, therefore, fluctuate the same as at present.

Assessments of vegetative-related effects would be based on expectations of normal 10-year-cycle precipitation during the life of the plan.

Long-term grazing use levels would be based on the effectiveness of the AMP process, through evaluation of monitoring information (e.g., utilization studies and actual use data) and modifications of those use levels as the need occurs.

The grazing EIS decisions as specified in the ROD and as updated in the range program summaries (RPS) would continue to be implemented.

## Wildlife and Fish Habitat Management

It is assumed that any quality changes of big game and waterfowl habitat could cause an increase or decrease in those wildlife populations. A direct relationship exists between the quality (i.e., condition and trend) of wildlife habitat and the wildlife populations using that habitat (i.e., numbers of animals and waterfowl).

## Forest and Woodland Management

It is assumed that timber stand quality would continue to decline on old harvest areas, and that pests and disease problems would increase if the infected residual stands remain.

It is also assumed that appropriate timber stand harvest and improvement (e.g., proper silviculture practices) would enhance most other resources. Typically rangeland resources (e.g., wildlife and livestock forage) would not be affected.

## Lands and Realty Management

It is assumed that land tenure adjustments (e.g.,increases and/or decreases in BLM lands) would be made in all alternatives. It is also assumed that preference would be given to those adjustments that would provide the most benefits to the public. This would be either public gains in quantity of lands (e.g., land exchanges where more acres are gained than given) or in quality of lands (e.g., gaining riparian zones).

Various methods of land tenure adjustment would be considered and would be accomplished according to FLPMA. In all cases, fair market value would be received for lands sold or leased for private use, and lands of equal or greater value would be received for exchanges.

All land adjustments identified in the various alternatives would be completed during the life of the plan. Also the adjustments would block up BLM lands through acquisition of state and private in-holdings and disposal of isolated BLM tracts.

Reducing trespass on BLM land would be a high priority in the resource area. Trespass would be identified and resolved by elimination or authorization through sale, lease, ROW grants, etc.

It is assumed that concentrated areas with existing major utility lines would be established as designated utility corridors in consultation/coordination with the Western Regional Corridor Study (WRCS). Future major rights-of-way (ROWs) would be restricted to these corridors unless appropriate justification is provided to do otherwise. Location of future major ROWs in specified areas would be confined to the area between existing ROWs in the Poncha Pass to Saguache area in the WRCS Corridor A.

Actions with site-specific impacts from development of facilities within communication sites, on smaller ROWs requested by the public, and in corridors (if designated) would be assessed in accordance with Bureau planning/ environmental regulations prior to BLM consideration for approval.

## Wilderness Management

In those alternatives that establish corridors, it is assumed that all the resource area wilderness study areas (WSAs) would be managed under *BLM Interim Management Policy and Guidelines for Lands Under Wilderness Review* (IMPG) until Congress makes a decision on wilderness designations within the district. Any WSAs not designated as wilderness would be returned to multiple use management for BLM lands as prescribed in the plan.

An interagency agreement between the U.S. Forest Service and BLM dated February 20, 1981, provided for the joint study of adjoining wilderness areas and designated the forest service as the lead agency in the study. A proposal has been made to Congress recommending 3,300 acres of contiguous BLM WSAs (Black Canyon, South Piney Creek, Papa Keal, and Zapata Creek) suitable for wilderness designation.

It is assumed that designated wilderness areas bordering national forest and national park lands would be managed by those adjacent responsible agencies through actions such as cooperative agreement, or boundary adjustment.

## Areas of Special Concern

It is assumed that all areas considered for wilderness (i.e., initial study areas) and those now designated for wilderness study (i.e., wilderness study areas) have some special values and, therefore, were considered in the nomination process as potential areas of environmental concern (ACECs). In addition to the 7 areas considered for wilderness values, 15 other sites were nominated, evaluated, and screened for recommendation as ACECs in this plan. Ten of the 22 areas were determined to meet the Bureau ACEC screening criteria and will be analyzed in each alternative in this plan. Future areas may be nominated, screened, and recommended. If designated, an EA/plan amendment would be prepared.

## Access and Transportation Management

It is assumed that acquisition of all identified access proposals would improve administration of resource programs. Also it is assumed that state and county collector and local roads would continue to be maintained and that BLM resource roads would not be routinely maintained. An active signing/ barricading program would also be implemented on road closures and problem areas. Although there may be some slight differences in program emphasis between management alternatives, these differences would not be significant in providing access and transportation services for the specific programs in the alternatives. Specific adverse effects, therefore, have not been analyzed in the impact section of this chapter.

## Recreation Management

Based on documentation in the *Colorado Comprehensive Outdoor Recreation Plan* (CORP), visitor use on BLM lands is expected to significantly increase over present rates. Current types of recreation use would continue in the future with specific emphasis on dispersed recreation needs.

## Visual Resource Management

All actions would be guided by BLM visual resource management class objectives.

## Historical Resources

Under current circumstances, historical resources would continue to deteriorate through natural forces and from public use and vandalism if no corrective nor preventive action is taken. Clearance would be required pursuant to 36 CFR 800. Assuming full compliance and enforcement of Section 106 of the *National Historic Preservation Act* (NHPA) of 1966, which would be completed before beginning any actions resulting from ARMP decisions, there would still be a net adverse effect to this resource.

## Archaeological Resources

Under current circumstances, archaeological resources would continue to deteriorate through natural agents, normal public use, and vandalism if no corrective nor preventive action is taken. Assuming compliance and enforcement of Section 106 of NHPA (1966) and mitigation pursuant to 36 CFR 800, which would be completed prior to any actions resulting from ARMP decisions, the resource base would still deteriorate. Clearance would be required pursuant to 36 CFR 800.

## Economic Conditions and Social Environment

It is assumed the socio-economic analysis is adequate to analyze local/regional social and economic effects of the alternatives; effects on the BLM San Luis Resource Area management costs; and effects on national values for recreation activities.

Currently there are no up-to-date models specific to the economic study area (ESA) that could be used to measure total employment and earning changes by alternative. The Bureau of Economic Analysis Regional Input-Output Modeling System (RIMS II), however, has multipliers for Colorado, which are used in this analysis. The expenditure data was developed from studies by the U.S. Fish and Wildlife Service and other studies for Colorado (Tables 4-1 and 4-2). Table G-3 in Appendix G presents expenditures by alternative.

Table 4-1
CONTRIBUTION TO THE ESA OF EMPLOYMENT AND EARNINGS FROM RECREATION ACTIVITIES OCCURRING ON BLM LAND BY ALTERNATIVE

| | | Alternatives | | |
|---|---|---|---|---|
| Total | Existing Management | Natural Resource Enhancement | Resource Production Enhancement | Preferred |
| Expenditure | 2,155,508 | 2,187,270 | 2,091,109 | 2,177,870 |
| Output | 4,561,056 | 4,628,264 | 4,424,787 | 4,608,373 |
| Earnings | 1,482,773 | 1,504,623 | 1,438,475 | 1,498,157 |
| Employment | 118 | 120 | 115 | 119 |

## Table 4-2
## LOCAL AND REGIONAL IMPACT OF EMPLOYMENT ON BLM LANDS

| Alternative | Recreation Activity Employment | Percent Change in Employment |
|---|---|---|
| Existing Management | 118 | Less than 1 percent |
| Natural Resource Enhancement | 120 | Less than 1 percent |
| Resource Production Enhancement | 115 | Less than 1 percent |
| Preferred | 119 | Less than 1 percent |

Management under all alternatives would affect employment, population, and income in the area. Most of the effects occur because of impacts on the ranching sector, forestry sector, and retail and service sectors. These economic sectors would be affected by changes in grazing, forestry, and recreation opportunities occurring from the land uses in the alternatives. The potential economic impacts are insignificant between alternatives and are insignificant as they relate to local and regional impact (Table 4-2).

The expenditure data is used to measure economic effects on the ESA and national values are defined as the net economic gain from an activity. Expenditures are important to local and state economies, but they do not reflect the total recreation values of the resource, which include the personal benefits one receives from participation in that activity. Thus, national values measure these additional benefits. For example, the net gain or national values from a recreation activity is what the recreator is willing to pay over their actual costs to participate in the activity. Net gains are portrayed here on an annual basis.

These national values are estimates of "willingness to pay" (wtp). Wtp values are easy to determine when goods and services are bought and sold in well-defined markets. Recreation wtp values, however, usually have to be estimated from secondary sources (Table 4-3).

No significant population change would result from land use allocation in any of the alternatives. The impacts from each alternative tend to be site-specific and confined to a particular type of user group. Any decision would usually produce tradeoffs with social advantages for some persons or groups and social disadvantages for others.

Some resource products on BLM land can be valued; others cannot. Dollar values can be assigned to timber and other resources (Tables 4-4 and 4-5).

## Table 4-3
## NATIONAL DOLLAR VALUE PER RESOURCE UNIT

| Resource | Unit | Dollar Value |
|---|---|---|
| Livestock | AUM | 7.55 [a] |
| Deer hunting | AUs | 47.86 |
| Elk hunting | AUs | 137.22 |
| Antelope hunting | AUs | 18.95 |
| Other big game hunting | HDs | 23.17 |
| Waterfowl hunting | HDs | 6.78 |
| Warm water angling | ADs | 3.76 |
| Cold water angling | ADs | 4.15 |
| Dispersed recreation use | RDs | 3.55 |
| Nongame Use (nature study) | RDs | 8.58 |

[a] The charge to lessee is $1.54/AUM.
Source: Colorado BLM SAGERAM 1987 Price file.

All of these values were estimated as willingness to pay values. Some of the values were determined by observation of goods and services bought and sold in well defined markets. For example markets exist for grazing; however, other resources such as recreation do not have established markets. These values were based on various willingness to pay studies.

Examples of other benefits not assigned monetary values include the value to future generation of protection and preserving cultural resources, the benefits of maintaining viable populations of wildlife species, and the satisfaction derived by those who do not have any intention of seeing these populations.

Mineral values are also not considered. Mineral activity on BLM lands respond mostly to changes in market prices over time, rather than to changes in alternative land management plans. Price changes in minerals or the amount of minerals that can be produced in the future on BLM lands cannot be predicted. Thus minerals are not valued for the trade-off analysis, but are considered during the decision making process.

The average rate for an animal-unit month on nonirrigated privately-owned lands in the 11 western states is about $8. This value is used as a correlative equal value for ranch income per AUM on BLM lands.

The base cost of $650,000 per year is not expected to change. The actual dollar amount may change because of inflation. In terms of 1987 dollars, however, the $650,000 is not expected to increase. How and on what resources the dollars are spent would vary by alternative.

## Table 4-4
## ESTIMATED
## RECREATION NATIONAL ANNUAL DOLLAR VALUES BY 2007

| Activity | Value | Base | Existing Management | Alternatives: Natural Resource Enhancement | Alternatives: Resource Production Enhancement | Preferred |
|---|---|---|---|---|---|---|
| OHV | 8 | 151,520 | 172,430 | 169,334 | 172,430 | 173,613 |
| Other Motor | 8 | 71,360 | 81,208 | 65,003 | 90,949 | 85,578 |
| Nonmotor | 10 | 148,700 | 169,221 | 203,019 | 126,887 | 169,221 |
| Camping | 6 | 52,440 | 59,677 | 60,837 | 57,014 | 59,677 |
| Hunting | 70 | 986,300 | 1,122,409 | 1,167,019 | 1,077,800 | 1,155,070 |
| Land Based | 8 | 196,640 | 223,776 | 228,237 | 214,854 | 228,237 |
| Fishing | 4 | 151,240 | 172,111 | 175,571 | 168,652 | 172,111 |
| Boating | 13 | 16,380 | 18,640 | 14,942 | 22,339 | 17,753 |
| Other Water | 8 | 58,160 | 66,186 | 68,280 | 63,728 | 66,186 |
| Winter Sports | 18 | 3,600 | 4,097 | 4,916 | 4,506 | 4,916 |
| Snowmobiling | 8 | 4,240 | 4,824 | 4,097 | 5,280 | 4,825 |
| Total | | 1,840,580 | 2,094,580 | 2,161,255 | 2,004,439 | 2,137,187 |
| Change from Existing | | | | 66,675 | -90,141 | 42,607 |
| Percent Change from Existing | | | | 3 | -4 | 2 |

## Table 4-5
## ESTIMATED NATIONAL ANNUAL DOLLAR VALUES BY 2007

| Resource | Value | Base | Existing Management | Alternatives: Natural Resource Enhancement | Alternatives: Resource Production Enhancement | Preferred |
|---|---|---|---|---|---|---|
| Recreation [a] | | 1,840,580 | 2,094,580 | 2,161,255 | 2,004,439 | 2,137,187 |
| AUMs | 8 | 259,200 | 259,200 | 208,000 | 340,000 | 259,200 |
| Sawtimber Mfb | 11 | 3,168 | 3,168 | 605 | 3,168 | 3,168 |
| Cords of Wood | 9 | 5,102 | 5,102 | 3,330 | 5,940 | 5,697 |
| Total | | 2,108,050 | 2,362,050 | 2,373,190 | 2,353,547 | 2,405,256 |
| Percent Change From Base | | | 12 | 13 | 12 | 14 |

[a] See Table 4-4

### Special Status Plant and Animal Species

It is assumed that in all cases, full compliance with Section 7 of the *Endangered Species Act* (1973) would be completed before invoking specific actions resulting from RMP decisions. This requires mandatory consultation and coordination with the USFWS and clearance of lands inhabited by these species. It is assumed that inventory analysis and monitoring would be done for special plant and animal species. Clearances for special plant and animal species would be completed for all proposed management actions in all alternatives.

### Waterpower/Storage

It is assumed that additional waterpower/storage site withdrawals would continue to be made on sites that meet the qualifying criteria for waterpower/storage.

Location and evaluation of new waterpower/storage sites would continue and would be added to the inventory. Land acquisitions of waterpower/storage sites meeting the criteria would be completed as needed and subsequent waterpower/storage site withdrawal would be made where appropriate.

## ALTERNATIVES ANALYSIS

The following four sections of this chapter present the four alternatives, which are Existing Management, Natural Resource Enhancement, Resource Production Enhancement, and the Preferred.

Only resources and resource uses with an identified net affect (after various standard mitigation measures are applied) are analyzed. A description of this net affect and any determined cumulative effects are presented in this analysis section.

## EXISTING MANAGEMENT ALTERNATIVE

The following impacts are the unavoidable net effects in this alternative.

### Minerals Management

Under this alternative, approximately 617,251 acres (99.5 percent) of the Federal fluid mineral estate would be open for leasing and 3,620 acres (0.5 percent) would be closed to leasing. Appendix B identifies proposed lease stipulations for the resource specific requirements for stipulation waivers, exceptions, and modifications. Tables 4-6 and 4-7 list this acreage by leasing categories for oil and gas and geothermal resources.

TABLE 4-6
MANAGEMENT OF OIL AND GAS LEASES BY ACRES
(Existing Management)

| Management Category | Nominal Potential | Low Potential | Moderate Potential | Total | Percent of Mineral Estate |
|---|---|---|---|---|---|
| Open: | | | | | |
| Standard Lease Terms | 51,880 | 289,425 | 15,345 | 356,650 | 58.0 |
| Seasonal Restrictions [1] | 33,830 | 205,455 | 7,845 | 248,596 | 39.0 |
| NSO or Similar Constraints [2] | 2,625 | 9,220 | 160 | 12,005 | 2.5 |
| Closed: [3] | | | | | |
| Nondiscretionary | | | 3,620 | 0.5 | |

[1] Big game crucial winter range, antelope fawning range, and waterfowl nesting areas.
[2] Big horn lambing areas, bald eagle habitat, Pike Stockade R&PP site, Monte Vista park R&PP site, and the Rio Grande SRMA.
[3] City of Del Norte and WSA lands.

TABLE 4-7
MANAGEMENT OF GEOTHERMAL LEASES BY ACRES
(Existing Management)

| Management Category | Low Potential | Moderate Potential | High Potential | Total | Percent of Mineral Estate |
|---|---|---|---|---|---|
| Open: | | | | | |
| Standard Lease Terms | 295,610 | 56,195 | 4,845 | 356,650 | 58.0 |
| Seasonal Restrictions | 225,686 | 18,870 | 4,040 | 248,596 | 39.0 |
| NSO or Similar Constraints | 9,324 | 2,536 | 145 | 12,005 | 2.5 |
| Closed: | | | | | |
| Nondiscretionary | | | | 3,620 | 0.5 |

Continuation of current management could result in a slight modification of the above identified management categories based on new resource data. Such modification would be in conformance with the resource decisions of the current Oil and Gas/Geothermal Umbrella Environmental Assessment (EA).

Managing 6,260 acres for bighorn sheep lambing range and 150 acres of bald eagle habitat with a no surface occupancy (NSO) stipulation would result in substantially higher (50 to 100 percent) drilling and development costs as directional drilling would be required, if feasible. Managing crucial big game winter range, antelope yearlong range and fawning range, bald eagle roosting sites, and waterfowl nesting areas under a seasonal use restriction on 248,596 acres of mineral estate would result in higher exploration, drilling, and development costs in addition to possible scheduling problems.

The management of 4,395 acres of fluid mineral estate within the Rio Grande River Corridor Special Recreation Management Area and 1,200 acres within the Pike Stockade/Monte Vista park sites through use of a no surface occupancy stipulation would result in substantially (50 to 100 percent) higher drilling and development costs because of required use of directional drilling (if feasible) from off-site locations.

All Federal fluid mineral estate would be open for leasing with the exception of the 3,620 acres within the incorporated city of Del Norte and the WSAs recommended for wilderness designation. Managing 356,650 acres under standard lease terms would allow for the exploration and development of potential fluid mineral resources from these lands with few restrictions. Managing 248,596 acres with seasonal stipulations could result in higher exploration and development costs along with scheduling inconvenience. Any increase in exploration and/or development costs for fluid minerals could result in a potential loss of fluid minerals production within the planning area. A no surface occupancy stipulation on 12,005 acres for recreation, residential, and wildlife management requirements would result in substantially higher drilling and development costs for these areas. This negative impact would be significant because of the general lack of information concerning fluid resources in the planning area and the inability to obtain such information because of the restrictions on these lands.

Identifying approximately 610,621 acres (98 percent) as open to mineral entry and location would leave this acreage available for exploration and development under the general mining laws. The continuation of current withdrawals on 6,950 acres and the inclusion of 3,300 acres into the wilderness system would eliminate these lands (2 percent) from potential mineral location and development. These lands have a low potential for locatable minerals of all types; therefore, the continuation of these withdrawals should not result in a significant impact.

The management of 5,060 acres of BLM lands as closed to off-highway vehicle (OHV) use would result in increased operation costs and inconvenience to the mining claimant/operator as 43 CFR 3809 regulations would require a plan of operation for all actions other than casual use.

Identifying approximately 613,176 acres (99 percent) of BLM land within the planning area as open to disposal of mineral materials would leave this acreage available for

use by public and government entities. Disposal of mineral materials would not occur on 4,395 acres within the proposed Rio Grande River Corridor Special Recreation Management Area (SRMA) and 3,300 acres within the WSAs recommended for wilderness designation. This closure would result in a negligible impact because of the low resource potential of this area, its general inaccessibility, long haulage distance to processing centers, and the abundant alternative sites located in the planning area. Total acres closed to minerals materials disposal would be 7,695 (1 percent).

## Paleontological Resources

Paleontological resources would be managed only to the extent specified in the *Antiquity Act* of 1906 and according to general Bureau policy. This would entail minimal to no inventory and afford protection to fossils of vertebrate species only. Educational opportunities would not be developed and, therefore, public awareness would be almost nonexistent.

## Riparian Resources Management

Good to excellent riparian condition would be maintained on approximately 1,400 inventoried acres, fair condition on 74 acres, and poor condition on 274 acres. Changes in livestock management would improve condition on 70 acres. Land tenure adjustment would result in a significant net increase in riparian vegetation and historical wetlands. Development of historic wetlands for wildlife/fisheries habitat would provide an additional 880 acres of riparian vegetation, which excludes the open water portion of these wetlands.

Inventory of an additional 1,413 acres would allow for recognition and maintenance of riparian values in future action plans.

Because of very limited BLM ownership and manageability problems, 15 acres on Kerber Creek would remain in poor condition.

Standard stipulations would continue to be incorporated into oil and gas and geothermal leases to prevent long-term degradation on 790 acres of riparian vegetation. Some losses of vegetation would be expected due to surface occupancy, but the extent and duration would be dependent on the type of development. NSO and seasonal limitations imposed because of wildlife concerns would protect riparian vegetation during the closure periods.

Withdrawals would preclude any mining on 1,150 acres (including Blanca Wildlife Habitat Area ) and would protect and maintain the riparian vegetation. Approximately 1,450 acres with potential for mining activity would be protected from undue and unnecessary damage by the 43 CFR 3809 regulations. There would be short-term losses of vegetation and a reduction in water quality, depending on the extent of development.

Mitigating measures to maintain riparian condition would be incorporated into any material sales within riparian zones.

Adherence to existing allotment management plans (AMPs) would maintain good to excellent condition on 1,400 acres, fair condition on 74 acres, and poor condition on 274 acres. Implementation of the Poison Gulch AMP (Ford Creek riparian demonstration area) would improve 70 acres from poor or fair to good condition. Incorporation of riparian objectives into some AMPs would benefit riparian vegetation on the 1,413 acres not inventoried. Any newly developed springs would be fenced, which would preserve small but important communities of riparian vegetation.

Restoration of historic wetlands within the Blanca Wildlife Habitat Area (WHA), the Emperius tract, and South Dry Lakes would produce an additional 880 acres of riparian vegetation. Maintenance of the Blanca WHA would ensure protection of 1,025 acres of riparian vegetation.

Emphasis would be on acquisition of riparian areas. Disposal of isolated tracts containing riparian vegetation would occur, resulting in a loss of 15 acres.

Surface-disturbing activities from vehicle use and earth-moving activity on rights-of-way would cause short-term damage to riparian vegetation. Mitigations would be required to maintain current condition.

Increased recreation use along the Rio Grande River Corridor would cause localized disturbance from trampling and OHV use. Riparian vegetation would be protected by OHV closures on 100 acres. OHV limitations that provide seasonal closures and/or allow travel only on specified routes would protect riparian vegetation on an additional 1,460 acres, including the Blanca WHA. Seasonal closures are often disregarded; therefore, new trails could occur in riparian zones. The remainder of the planning area would remain open to OHV use and this vehicle traffic would subject riparian vegetation to degradation.

Protection of *Cleome multicaulis*, which is dependent on saturated soils, would preserve small areas of riparian vegetation. Any improvement or expansion of bald eagle feeding habitat would improve or increase riparian vegetation.

## Livestock Grazing Management

Forage production would potentially increase by an estimated 10,000 animal unit months (AUMs) on the allotted lands based on expected grazing management improvements during the 20-year life of the plan. The use of these potential new AUMs would be based on needs identified for wildlife and livestock forage as they become available. The net effect would likely be beneficial to livestock grazing management within the resource area.

During the life of the plan, there could also be an estimated 30,000 more acres (of the 42,400 acres of unallotted lands) that very likely would become suitable production acres. This increase would potentially provide an approximate additional 1,500 AUMs that could be made available to livestock grazing use as needed. This would be done after complete and regular forage monitoring and appropriate NEPA documentation (probably an environmental assessment).

Implementation of the Ford Creek Riparian Demonstration Area would result in a temporary loss (4 to 5 years) of 150 AUMs in the Poison Gulch Allotment.

Some forage increases would occur on 4,612 acres (Blanca WHA) as a result of continued wetland wildlife management on 2,257 acres and implementation of riparian wildlife management on an additional 2,355 acres (Emperius and Snook lands). No significant impacts would occur to livestock grazing from the allocation of other forage increases (above the authorized 32,400 AUMs). These increases would be determined by management actions outlined in the various CRMAPs, AMPs, etc.

Seasonal limitations to OHV use on 80,612 acres (15 percent) and closures on 5,060 acres (1 percent) would reduce forage damage and management problems created by use in the spring.

The overall net effect to livestock grazing management in the resource area could be to potentially increase available forage by about 11,500 AUMs over the span of this land use plan.

## Wildlife and Fish Habitat Management

Habitat quality increases would occur on 7,550 acres of water bird nesting habitat as a result of intensive wetland management on 1,600 wetland acres and the restoration of 1,175 acres of historical wetlands. Numbers of water birds produced on public lands would increase significantly. Wetlands management would produce an additional 1,000 riparian acres benefiting a multitude of riparian-dependent species including several considered to be sensitive. Emphasis on acquisition of state and private lands with riparian/ wetland values would decelerate the decline of the habitat types because of conversion to other uses.

Minimizing disturbance through restrictive use stipulations on big game crucial winter range and birthing areas, bald eagle roosting habitat, and water bird nesting areas would decrease stress, thereby reducing mortality and birthing losses and improve the condition and health of these populations overall on 248,596 acres.

Allocation of forage (48,000 AUMs) would maintain existing populations. Allocation of forage increases above 48,000 AUMs to big game species would reduce any potential conflict between livestock and wintering big game. Acquisition of state and private lands adjacent to or within crucial wildlife areas would further reduce the potential conflict.

No surface occupancy restrictions on 6,410 acres of bighorn sheep lambing areas and bald eagle nesting sites would maintain the characteristics of the site-specific acres necessary for successful reproduction of these species. Human activity and construction operations tend to repel big game species, creating disturbance and forage over-utilization problems on undisturbed acres. This stress would reduce weights of big game species and increase their susceptibility to disease. Placing seasonal restrictions on big game crucial winter range, antelope yearlong range and birthing range, and waterfowl nesting areas (248,596 acres) would reduce stress and mortality and fetal losses.

Numbers of waterfowl would remain stable as a result of seasonal limitations on 7,750 acres of crucial waterfowl habitat.

The withdrawal in the Blanca Wildlife Habitat Management Area would protect 5,550 acres of wetlands from mineral location and entry. This withdrawal does not include additional acreage in Blanca (i.e., the Emperius tract).

Discretionary mitigation measures would be incorporated into any material sales that occur on designated wildlife habitat.

Riparian management would maintain present condition on riparian wildlife habitat.

Forage conditions on 460,000 acres of big game winter range would generally improve with continued development of grazing systems and improved management practices. Conflicts would also be reduced between livestock and wildlife on 333,480 acres of crucial big game winter ranges.

Winter timber harvest closures (December 1 through March 1) on 4,315 acres would maintain present winter use by big game. Small firewood sales in pinon-juniper stands would improve wildlife habitat by creating openings in the overstory

canopy and increasing forage production, which would allow greater species diversity. Management for sustained-yield production on pine and Douglas-fir stands would decrease both thermal and hiding cover on 4,315 acres of crucial winter habitat for big game and adversely affect 40,000 acres of open crucial winter habitat adjacent to these stands.

Additional public access would be generally beneficial to wildlife recreation allowing better harvest and population control for game species. Additional public access into crucial wetland production areas would be detrimental to water bird production during the breeding season.

Management of Trickle Mountain Wildlife Habitat Area, Blanca Wildlife Habitat Area, and the proposed Rio Grande River Corridor SRMA would have a positive effect on wildlife values on approximately 56,660 acres.

Closing 5,060 acres to vehicle uses would eliminate disturbances or harassment of wildlife. Crucial wildlife habitat on 52,271 acres would be maintained on Trickle Mountain and Blanca WHAs. Habitat destruction and disturbance and harassment of wildlife would occur on 435,005 acres of BLM land open to OHV use, which includes the remaining acres of crucial wildlife habitat.

Crucial terrestrial and riparian habitats would continue to improve on BLM lands. Adequate forage would be available over the long term for projected big game populations.

A net improvement in aquatic habitat on 8.8 miles of stream would occur as a result of improved riparian through intensive grazing management. Maintaining current riparian habitat conditions and trend should also maintain the aquatic habitat in its present condition where the trend is stable.

Designation of the Trickle Mountain WHA, the Blanca WHA/SRMA, and the Rio Grande River Corridor SRMA would help emphasize aquatic wildlife habitat values on approximately 56,660 acres.

Placer operations, which involve dredging, vegetation removal, and streambank disturbance, would potentially have adverse impacts on aquatic habitat systems. Water quality, water temperatures, bank and channel stability, and sedimentation would all be potentially adversely affected by these management actions.

Gravel pits or other mineral material excavations occurring in or adjacent to stream channels would potentially have adverse short-term impacts on bank and channel stability. Sedimentation at both the site and downstream would potentially be increased, resulting in deterioration of water quality.

Road and pad construction and pipeline development in or near stream channels would potentially result in loss of streambank vegetation, which would result in increased sedimentation, water temperatures, and channelization. These increases would adversely affect the aquatic habitat.

Road construction, skid trails, and landing decks in or near stream channels would result in loss of bank vegetation, channel stability, and organic input. These impacts would cause adverse effects, particularly along smaller streams that are more sensitive to disturbance.

Acquisition of additional acres along streams would occur. Disposal of isolated tracts along streams would also occur. The net impact to aquatic habitat would be beneficial.

Unrestricted OHV use along and across streams throughout the planning area could lead to decreased streambank stability, increased sedimentation, and increased water temperatures. Most of these impacts would be dispersed.

Overall aquatic wildlife habitat would expand and improve slightly.

## Forest and Woodland Management

Managing 5,769 acres (98 percent) of commercial forest lands for sustained-yield production would result in annual harvests of 288 Mbf of timber. Woodland management on 10,688 acres (86 percent) of productive operable woodlands would result in annual harvest of 567 cords of fuelwood. Annual harvests of forest products would improve the existing age class distribution and increase growth rates by reducing impacts of forest pests. Intensive management practices would maintain species diversity and increase legal and physical access.

Road construction could improve access into potential sale areas, which would reduce timber harvesting costs. Road and pad construction associated with mineral development would reduce available timber and woodland areas; however, the acreage lost would be very minimal.

Seasonal wildlife restrictions on harvesting, however, frequently reduce or preclude bidding on some tracts. Residual low quality and pest infested stands, which were improperly treated 20 to 30 years ago, might not be treated and placed into productive management without a successful sale program. The long-term result would be reduced harvest levels.

An annual harvest of 660 cords of fuelwood could be produced from 12,482 acres of productive operable woodlands if the WSAs are returned to multiple use management.

## Lands and Realty Management

BLM land manageability would improve through acquisition and disposal. This would likely result in a net gain in BLM land and would be based on the lands identified in the existing management framework plans (MFPs).

All existing withdrawals would remain in place, which would result in no adverse effects. New withdrawals would be initiated with appropriate justification.

## Areas of Special Concern

Wildlife, scenic, recreation, and wild and scenic river values would be protected on Blanca WHA, Trickle Mountain/ Ford Creek WHA, and the Rio Grande River Corridor SRMA (56,666 acres), which is 41 percent of the total. Special management to protect wildlife, recreation/scenic, cultural, or other unique values on the remaining 80,318 acres (59 percent) would not occur.

## Recreation Management

Intensive recreation management of Blanca WHA and the Rio Grande River Corridor SRMA would occur and would enhance wildlife/recreation opportunities on 12,145 acres (2 percent). The primitive or wilderness type experience would be adversely affected without wild and scenic management. Extensive recreation management would maintain recreation opportunities on the remaining 508,532 acres (98 percent).

Table 4-8 shows OHV designated acreages in the planning area.

TABLE 4-8
OHV DESIGNATION

| Designation | Acres | Percent |
|---|---|---|
| Open | 435,005 | 84 |
| Limited | 80,612 | 15 |
| Closed | 5,060 | 01 |
| TOTAL | 520,677 | 100 |

An NSO on the Rio Grande River Corridor SRMA would protect 4,395 acres from surface-disturbing activities. A nondiscretionary closure in the WSAs recommended for wilderness designation would protect 3,300 acres of wilderness values from mineral leasing. These acres would also be closed to disposal of mineral materials.

Preserving riparian zones would enhance scenic and wildlife viewing opportunities on 1,678 acres. Management of the 7,750 acres in Blanca WHA would enhance opportunities for fishing, hunting, and wildlife viewing.

Limiting OHV use to designated roads and trails in the Blanca and Trickle Mountain WHAs would reduce conflicts between users such as grazing permittees, members of the public viewing wildlife, hikers, and other nonmotorized recreationists.

Additional BLM land gained through access acquisition and road development and improvement would increase camping, hunting, sightseeing, four-wheeling, and snowmobiling opportunities. Temporary disruption of dispersed types of recreation activities could occur on 150 acres annually.

Acquisition of land adjacent to the Rio Grande River Corridor SRMA would provide additional public access to the area and reduce conflicts between recreationists and private landowners. Additional land and access would provide increased recreational opportunities.

Management of Trickle Mountain/Ford Creek WHAs would enhance recreation opportunities on 44,521 acres. Designation of the Rio Grande River Corridor as an SRMA would increase recreation water-based opportunities on 4,395 acres, and the primitive and wilderness type experience would be adversely affected on 1,760 acres (8.8 miles of the river) without wild and scenic management.

Significant recreation opportunities in the Rio Grande River Corridor SRMA would be enhanced in this alternative. In Blanca and Trickle Mountain WHAs, recreation opportunities would also be enhanced. Dispersed recreational opportunities in the San Luis Extensive Recreation Management Area would remain essentially unchanged.

## Visual Resource Management

Protection of visual resources would not necessarily occur because visual resource management (VRM) criteria would not be followed in all cases. As surface-disturbing actions occur, visual resources would gradually be degraded.

Mineral development would be expected to alter landscapes in a few localized viewsheds.

Forest harvesting practices would be implemented on 1,660 acres of VRM Class II land in scattered localized viewsheds over a period of 120 years. Woodland harvest practices would be implemented on 7,685 acres of VRM Class II areas in a dispersed pattern over a period of 175 years.

The effect from harvest would be very gradual during the 15- to 20-year life of the plan.

Development of major utility facilities could alter landscape characteristics on 1,505 acres of class II lands.

Open OHV use designation on 84 percent of the planning area would result in localized alterations of scenic quality and could increase the potential for irreversible impacts.

Over time, 146,370 acres of potential VRM Class II areas could be lowered to VRM Class III. Managing the remainder of the planning area (371,932 acres) as VRM Class III and IV would maintain the overall visual character of the planning area, but might allow for significant visually contrasting projects or disturbances in scattered localized viewsheds.

## Historical Resources

Minimal legal protection of 18 identified significant historical sites (1,180 acres) would occur in accordance with Section 106 of the *National Historic Preservation Act* of 1966 (as amended) and other appropriate legislation.

## Archaeological Resources

Minimal legal protection would occur in accordance with existing legislation and policy.

## Economic Conditions and Social Environment

Local and regional social and economic impacts, economic national values analysis, and impacts on the BLM San Luis Resource Area management costs are addressed in this analysis. Stipulations placed on fluid mineral leasing would not have measurable economic or social impacts. Any increased operating costs resulting from the stipulations would lower the potential for economical production. In addition, economic benefits associated with the unknown oil and gas potential would not occur. The continued withdrawal of 6,750 acres would not likely have any impacts on the local economy since these withdrawn lands have a very low potential for locatable minerals. Closing acres to the disposal of mineral materials would not have economic nor social impact because of low resource potential in this area. No net increases nor decreases would occur.

Efforts to increase forage for wildlife populations could translate into more big game populations. Any increase could affect the economic sectors dependent on hunting and nonconsumptive uses of wildlife. These increases would not be expected to have any significant impact on economic and social conditions in the planning area. Slight improvement of habitat resulting in a slight increase of angler days is not expected to have any significant impact on economic and social conditions in the planning area.

Sale of 288 Mbf sawtimber annually would support the economic study area (ESA) income and employment and produced $3,168 in Federal revenue. Also the sale of 567 cords of fuelwood annually would help offset residential energy costs and produce about $5,102 in Federal revenue. Local employment and income would be supported to the extent that purchases would be made by commercial fuelwood cutters.

Economic and social impacts of land tenure adjustments cannot be estimated because they would occur on a case-by-case basis.

Economic benefits from recreation would be enhanced and would be concentrated on those businesses providing tourist and recreation sales and services (see Assumptions for Analysis, Table 4-1).

The cumulative impacts on the local economy would likely be beneficial, but not large.

BLM SLRA management costs are $650,000 per year compared to benefits of $2,362,050.

Table 4-4 (Assumptions for Analysis) shows impacts to national values from recreation activities on SLRA lands. The estimated national value of recreation activity is about $2.1 million. The total impact to national values from recreation, range, and forestry is about $2.36 million.

The BLM SLRA costs can be compared to the benefits over time using 8-7/8 percent discount rate. The ratio of national value compared to the cost is shown in Table 4-9. Benefits were only those measured in the national income tables.

TABLE 4-9
BLM SLRA MANAGEMENT COSTS
COMPARED TO BENEFITS
BY ALTERNATIVE

| Alternative | Benefit/Cost Ratio |
|---|---|
| Existing Management | 3.39 |
| Natural Resource Enhancement | 3.40 |
| Resource Production Enhancement | 3.39 |
| Preferred | 3.42 |

## Special Status Plant and Animal Species

Riparian and wildlife developments in the grazing allotments could result in a net benefit to special plants.

Populations of *Astragalus ripleyi* would be adversely affected as a result of continued grazing use on the stock driveway.

Additional bald eagle roosting facilities and prey development would enhance the habitat in the Blanca WHA through implementation of the activity plan. Acquisition of lands within the Rio Grande River Corridor SRMA would also enhance bald eagle roosting and prey development.

## Waterpower/Storage

There would be no impacts in this alternative.

# NATURAL RESOURCE ENHANCEMENT ALTERNATIVE

The following impacts are the net unavoidable effects in this alternative.

## Minerals Management

Under this alternative, approximately 617,251 (99.5 percent) acres of Federal fluid mineral estate would be open for leasing and 3,620 acres (0.5 percent) would be closed to leasing. Appendix B identifies proposed lease stipulations for resource specific requirements for stipulation waivers, exceptions, and modifications. Closing 3,620 acres and placing 87,845 acres (14 percent) under a no surface occupancy (NSO) stipulation would result in a significant impact to fluid mineral resources as approximately 30,000 acres would not be feasible to lease because of the economic and technological constraints of directional drilling. The net effect would be that approximately 587,000 acres (95 percent) would be feasible for leasing. This impact is based on the assumption that fluid mineral resources in excess of one-quarter mile from a well site could not in all probability be drained without the use of directional drilling. Directional drilling, if feasible, is generally limited to 1 mile from surface location or a total drainage distance of 1¼ miles. This generalized distance of 1¼ miles was utilized to determine which areas under NSO restriction would not, in all probability, be leased. In addition, management of 384,105 acres (62 percent) of fluid mineral estate under seasonal use limitations for wildlife and off-highway vehicles (OHV) could result in higher exploration and development costs because of potential scheduling inconvenience, unavailability of equipment during specific time periods, and potential interference with production operations.

Tables 4-10 and 4-11 provide acreage values by leasing category for oil and gas and geothermal resources respectively.

Managing 3,230 acres of riparian resources under a no surface occupancy stipulation would result in a low impact to fluid mineral resources because these areas are 300 feet or less in width. Some inconvenience and additional cost could result from application of this stipulation, but no loss of fluid mineral resource is anticipated.

Management of crucial winter range for three or more big game species (46,590 acres) and areas of bighorn sheep lambing range (6,260 acres) under a no surface occupancy (NSO) stipulation on a total of 52,850 acres would result in a severe impact on fluid mineral resources. Implementation of this management objective would result in the virtual elimination of approximately 20,000 acres of fluid mineral estate from leasing and development because of technological and economic limitations. Development of the fluid mineral resource from the remaining NSO area could occur if technically feasible; however, such activity would result in substantial cost increases (30 to 100 percent) and a substantial lowering of resource development potential.

The management of 384,105 acres of crucial deer, elk, antelope and bighorn sheep range, waterfowl habitat, and raptor sites under a restriction could result in significant impacts to fluid resources because of the extensive area involved and the cumulative effect of different seasonal restrictions on specific areas. These restrictions could result in significant scheduling inconvenience, unavailability of drilling rigs, and additional costs.

Managing 13,766 acres of special recreation management areas (SRMA), 17,370 acres of semiprimitive nonmotorized areas (SPNM), and 1,200 acres of Pike Stockade/Monte Vista park sites under an NSO stipulation would result in significant impacts to fluid mineral resources. The impact of this management decision for NSO on 32,336 acres would virtually eliminate approximately 10,000 acres from leasing because of technical and economical constraints and would significantly increase the exploration and development cost (30 to 100 percent) of the remaining areas. In addition, the implementation of a seasonal use restriction to limit OHV use on 384,105 acres could result in scheduling inconvenience, increased costs, and potential unavailability of drilling rigs.

## TABLE 4-10
## MANAGEMENT OF OIL AND GAS LEASES BY ACRES
## (Resource Enhancement)

| Management Category | Nominal Potential | Low Potential | Moderate Potential | Total | Percent of Mineral Estate |
|---|---|---|---|---|---|
| Open: | | | | | |
| Standard Lease Terms | 6,934 | 136,063 | 2,365 | 145,362 | 23.5 |
| Seasonal Restrictions [1] | 81,416 | 281,864 | 20,825 | 384,105 | 62.0 |
| NSO or Similar Constraints [2] (i.e. policy) | 25,348 | 62,276 | 160 | 87,784 | 14.0 |
| Closed: [3] | | | | | |
| Nondiscretionary | | | | 3,620 | 0.5 |

[1] Big game crucial winter range, antelope fawning range, and waterfowl nesting areas.
[2] Big horn lambing areas, bald eagle habitat, Pike Stockade R&PP site, Monte Vista park R&PP site, and the Rio Grande SRMA, which includes the 8.8-mile portion recommended for wild and scenic designation.
[3] City of Del Norte and WSA lands.

## TABLE 4-11
## MANAGEMENT OF GEOTHERMAL LEASES BY ACRES
## (Resource Enhancement)

| Management Category | Low Potential | Moderate Potential | High Potential | Total | Percent of Mineral Estate |
|---|---|---|---|---|---|
| Open: | | | | | |
| Standard Lease Terms | 115,392 | 28,620 | 1,350 | 145,362 | 23.5 |
| Seasonal Restrictions | 332,750 | 44,095 | 7,260 | 384,105 | 62.0 |
| NSO or Similar Constraints | 79,237 | 4,885 | 420 | 87,784 | 14.0 |
| Closed: | | | | | |
| Nondiscretionary | 3,620 | 0.5 | | | |

Management of the six eligible National Register of Historic Places (NRHP) seasonal use sites under an NSO stipulation (740 acres) would in all probability result in only limited impacts to fluid minerals because of the narrow linear nature of the road and/or railroad beds and the small isolated size of the specific site. Some inconvenience and additional cost could result as a consequence of this requirement, but no fluid resource values would be lost as avoidance of cultural sties is instituted as policy.

Managing 150 acres of bald eagle roosting areas under a no surface occupancy requirement would result in increased drilling and production costs because of the need for directional drilling to develop potential fluid resources within the central portion of these roost areas. This increased cost could result in loss of potential fluid mineral resources in these areas. The use of a seasonal restriction on 5,975 acres of bald eagle wintering areas could result in higher exploration, drilling and development costs, and possible scheduling inconvenience.

All Federal fluid mineral estate would be open for leasing with the exception of the 3,620 acres within the incorporated city of Del Norte and the WSAs recommended for wilderness designation. Managing 145,301 acres (23.5 percent) under standard lease terms would allow for the exploration and development of potential fluid mineral resources from these lands with few restrictions. Management of an additional 384,105 acres (62 percent) of fluid mineral estate under a seasonal use restriction could result in increased costs to the operator/lessee because of scheduling inconvenience, cumulative effects of various seasonal use restrictions for different resource values, and potential production access problems. The implementation of an NSO requirement on 87,845 acres of fluid mineral estate (approximately 14 percent of the planning area) would as indicated result in a defacto closure of approximately 30,000 acres and significantly limit exploration and development on the remaining 57,845 acres. This impact is especially significant in this planning area because of the limited geologic, stratigraphic, and structural fluids information available for much of the region and the inability to acquire this necessary information because of surface use exclusions. This fact is of special concern within the area of the oil and gas development contract.

Identifying 601,665 acres (97 percent) as open to mineral entry and location would make this acreage available for exploration and development under the general mining laws. Continuation of existing and new withdrawals from mineral entry on the Blanca Wildlife Habitat Area (7,750 acres), USFS administrative sites (200 acres), the Pike Stockade/ Monte Vista park R&PP sites (1,200 acres), 3,300 acres of WSAs recommended for wilderness designation, six eligible NRHP sites (740 acres), and the 6,016 acres of Rio Grande River Corridor SRMA, which includes 1,760 acres of wild and scenic proposal, would preclude mineral exploration and potential production on these lands. Total acres closed to mineral entry and location would be 19,206 (3 percent). The impact of these actions, however, would not result in significant consequences because of the minimal to low potential of these acres for locatable minerals. Closure of 40,104 acres to OHV use and designation of 10 areas of critical environmental concern (ACEC) on 135,518 acres would result in increased operating costs and inconvenience for mining claimants/operators. These increases would occur because 43 CFR 3809 regulations require filing and approval of a plan of operations for all activities other than casual use.

Identifying 525,643 acres (85 percent) of BLM land within the planning area as open to disposal of mineral materials would leave this acreage available for use by public and government agencies. Disposal of mineral materials would be closed on 95,228 acres (15 percent). The closure of large portions of the Los Mogotes and San Luis Hills would be especially significant because of the moderate to high potential for the presence of volcanic cinders in these areas. The combination of closing 15 percent of the available lands added to the requirement for season of use restrictions on 384,105 acres or 62 percent would significantly limit the potential for the production and use of mineral materials within the planning unit.

## Paleontological Resources

Under this alternative, an intensive inventory would be initiated to determine the scope and kind of actual resources present within the planning area. All the significant resources, vertebrate and invertebrate, would be protected and developed for public education opportunities and research. These significant locations would be retained in public ownership and closed to OHV, surface occupancy, and other physical disturbance. Offering selected sites to the interested public as special educational and collecting area would enhance the overall understanding and protection of these resources.

## Riparian Resources Management

Approximately 1,400 acres of inventoried vegetation in good or excellent condition would be maintained, 400 acres would improve from poor or fair condition, and 15 acres would remain in poor condition. Inventory of an additional 1,413 acres would allow for recognition and management of riparian values in future action plans and possible modification of existing plans. Development of historic wetlands currently managed by BLM would provide an additional 1,370 acres.

Acquisition of additional acres would consolidate BLM land along stream corridors, improve management capabilities, and increase riparian acreage. Potential disposal of some BLM land would have a minor impact on the total riparian resource.

The 15-acre isolated tract on Kerber Creek would remain in poor condition because of limited BLM land ownership and related manageability problems.

No surface occupancy restrictions in all riparian zones would prevent degradation from occurring. Riparian condition would remain static on 3,230 acres.

The protective withdrawals on the Blanca Wildlife Habitat Area (WHA) and the Rio Grande River Corridor would preclude mining activity and maintain riparian condition on 1,250 acres. The 43 CFR 3809 regulations would protect riparian zones from undue and unnecessary damage, thereby preventing any degradation on the remaining 1,980 acres. The net effect would be to maintain riparian condition.

Since mineral sales would not be allowed in riparian zones, plant condition would remain the same on 3,230 acres.

Changes in grazing practices and control of livestock trespass in some allotments would result in an improvement in riparian condition on 335 acres. Grazing allotment management plans would maintain existing good or excellent condition on inventoried streams within the allotments.

Adequate fencing on all springs and reservoirs accessible to livestock would improve and expand riparian vegetation by a small amount and increase species diversity.

Development of historic wetlands for wildlife and fisheries habitat would improve and/or expand riparian vegetation on 1,370 acres in the following areas: Blanca WHA, Dry Lakes, Mishak Lakes, and Flat Top ponds.

Increased emphasis on acquisition of riparian areas would enhance management capabilities by consolidating ownership and provide additional acres of riparian vegetation. Acquisition and restoration of historic wetlands (1,000 acres) in the Dry Lakes and Mishak Lakes areas would increase the potential for development of important riparian zones in the planning area. Disposal of isolated tracts in the San Luis Lakes, Mishak Lakes, Del Norte West, and Bonanza areas would not be a significant impact on the total riparian resource.

Riparian condition and trend would be maintained since no surface-disturbing activity would be allowed.

Designation of the Trickle Mountain Wildlife Habitat/Ford Creek Riparian Area, Blanca Lakes Wildlife Habitat/ Recreation Area, and Rio Grande River/Box Corridor as areas of critical environmental concern (ACECs) would prevent degradation from occurring and might stimulate expansion and/or improvement of riparian vegetation in these areas.

OHV closures in all WSAs would protect 45 acres of riparian vegetation. OHV restrictions in riparian areas would protect the vegetation to some extent. Restrictions, however, are often disregarded; therefore, new trails and roads would occur through riparian zones, especially during the big game hunting seasons. Development of recreation sites in the Rio Grande River Corridor would result in a long-term loss of some riparian vegetation.

Protection of *Cleome multicaulis*, which is dependent on saturated soils, would preserve small areas of riparian vegetation. Enhancement of habitat for this plant would expand riparian zones by a small amount. Any improvement or expansion of bald eagle feeding habitat would improve or increase riparian vegetation.

## Livestock Grazing Management

Forage production would potentially increase by an estimated 10,000 AUMs on the allotted lands based on expected grazing management improvements during the 20-year life of the plan. These potential new AUMs would be provided to meet wildlife forage needs as they become available. The net effect would likely be beneficial to wildlife habitat management within the resource area.

During the life of the plan, there could also be an estimated 30,000 more acres (of the 42,400 acres of unallotted lands) that very likely would become suitable production acres. This potentially would provide for an approximate additional 1,500 AUMs that would be allocated to wildlife habitat management based on documented needs. This would be done after complete and regular monitoring and appropriate NEPA documentation (probably an environmental assessment).

Grazing practices needed to meet riparian objectives could result in additional limitations to livestock operators, temporary loss of licensed AUMs, and increased operational costs to permittees.

Forage increases would occur on 5,332 acres as a result of continued wetland habitat management on 2,257 acres and implementation of wetland habitat management on an additional 3,075 acres. Increases would be allocated to wildlife use after wetland habitat management objectives are met.

Seasonal limitations on approximately 384,105 acres (74 percent) and closures on approximately 40,104 acres (8 percent) to OHV use would improve livestock forage and would reduce management problems (e.g., livestock harassment).

The overall net effect to livestock grazing management in the resource area could potentially be an increase in available forage by 1,500 AUMs over the life of this land use plan.

## Wildlife and Fish Habitat Management

Significant habitat quality increases would occur on 7,550 acres of water bird nesting habitat as a result of intensive wetlands management on 2,257 acres and the restoration of 1,825 acres of historical wetlands. Numbers of water birds produced on public lands would increase very significantly. Wetland management would produce an additional 1,550 riparian acres benefiting a multitude of riparian-dependent species including several considered sensitive. Emphasis on acquisition of state and private lands with riparian/wetland values would decelerate the decline of these habitat types because of conversion to other uses.

Through restrictive use stipulations, minimized disturbance on big game crucial winter range and birthing areas, bald eagle roosting habitat, raptor nesting habitat, and waterfowl nesting habitat would decrease stress, thereby reducing mortality and birthing losses and improve the condition and health of these populations on 384,105 acres.

Allocation of forage increases above 48,000 AUMs to big game species would reduce any potential conflict between livestock and wintering big game. Acquisition of state and private lands adjacent to or within crucial wildlife areas would further reduce the potential for conflict.

No surface stipulations would be placed on 54,440 acres. Seasonal limitations would be placed on 384,105 acres.

These NSO and seasonal limitations on crucial winter range would reduce stress on big game populations, reduce mortality and fetal losses, and improve the overall condition of the herds.

The withdrawal in Blanca WHA (including the Emperius tract) would protect 7,750 acres of wetland habitat from mineral entry and location.

Restoring and protecting 3,230 acres of riparian habitat would provide additional forage and cover for big game, waterfowl, and nongame species and also would significantly increase waterfowl production. The prey base for raptors and other predators would be improved. In-channel structures and improvements would provide food and habitat for waterfowl, big game, and nongame species.

Development of grazing systems, land treatment projects, and livestock management practices would improve forage conditions, reduce conflicts between livestock and big game, and enhance distribution of most big game species on crucial winter range.

Commercial forest land management on 1,094 acres of crucial big game winter range would decrease both thermal and hiding cover and could also adversely affect 40,000 acres of adjacent crucial big game winter range. Management activities would not occur between December 15 and April 30. Productive operable woodlands management on 6,982 acres of pinon-juniper would provide temporary openings, create more edge effect, and encourage species diversity.

Additional public access would be generally beneficial to wildlife habitat allowing better harvest and population control for game species and wildlife viewing.

ACEC designation of the Trickle Mountain WHA, the Blanca WHA, the Los Mogotes area, and the Rio Grande River Corridor (including the 8.8-mile segment recommended for wild and scenic designation) would have a positive effect on wildlife values on 91,743 acres. ACEC designation on 46,862 acres of other areas would generally enhance wildlife habitat values. Management under an SRMA designation on Blanca WHA and the Rio Grande River Corridor (including the 8.8-mile segment recommended for wild and scenic designation) would complement both recreation and wildlife.

Closing 40,104 acres to vehicle uses would eliminate disturbances or harassment of wildlife. Limiting vehicle use to designated roads and trails would reduce habitat loss on 377,745 acres.

The results from completed wildlife habitat management construction on Blanca WHA/SRMA, through implementation of the activity plan, would be an additional 29 surface acres of combined warm and cold water fisheries.

No surface occupancy stipulations and mineral withdrawals would decrease sedimentation siltation and streambank degradation on 87,784 acres, and pipeline development could potentially lead to increased sedimentation and streambank instability on aquatic habitat.

Restoring and protecting riparian habitat would maintain the aquatic habitat in its present condition where the trend is stable. Structures placed in Ford Creek would improve pool/riffle ratios, stabilize streambanks, increase in-stream cover, and reduce channelization, streambank erosion, and sedimentation on 2.5 stream miles.

Intensive grazing management on 28.4 miles of stream aquatic habitat would generally maintain aquatic conditions as a result of improved riparian habitat along the Rio Grande River Corridor (which includes the 8.8-mile segment recommended for wild and scenic designation). The potential exists to acquire additional acreage along the river corridor for aquatic habitat. Disposal of aquatic habitat would not occur in this alternative. Designation of Trickle Mountain WHA, Blanca WHA, and the Rio Grande River Corridor (including the 8.8-mile segment recommended for wild and scenic designation) as ACECs would protect and enhance aquatic values. Closing some areas to OHV use along streams would maintain or improve aquatic habitat.

Road construction across aquatic areas to timber sale areas could increase sedimentation, streambank degradation, and water temperatures and decrease streambank cover.

All aquatic habitat would improve under management emphasizing habitat quality and protection, and the net impact would be beneficial.

## Forest and Woodland Management

Managing 1,094 acres (19 percent) of commercial forest lands for sustained yield would permit an annual harvest of 55 Mbf of timber. Woodland management on 6,982 acres (56 percent) of the productive operable woodlands would result in annual harvests of 370 cords of fuelwood.

Eliminating harvests on 1,910 acres of commercial forest land (CFL) located on crucial winter range in the Trickle Mountain area would reduce annual timber production by 95 Mbf.

Special harvesting techniques necessary to maintain values in 10 ACECs would increase production costs on 1,940 acres of CFL and 1,190 acres of productive operable woodlands.

Eliminating harvest on 1,110 acres of productive operable woodlands on areas classified as semiprimitive nonmotorized would reduce annual fuelwood production by 59 cords.

Protecting scenic qualities in VRM Class II acres would require special harvesting techniques on 1,660 acres of CFL and 7,685 acres of productive operable woodlands. Final harvest levels would not be reduced, but production costs would be increased because less volume could be removed at any one harvest entry.

Eliminating harvests on 740 acres of potential wildlife habitat would reduce harvest levels by 37 Mbf (13 percent).

Timber management limitations to meet wildlife, recreation, and VRM objectives would eliminate sustained-yield production on 4,675 acres (80 percent) of CFL resulting in an annual loss of 233 Mbf of timber. These limitations would also preclude annual harvests on 5,500 acres (44 percent) of productive operable woodlands resulting in an annual loss of 290 cords of fuelwood. Forested lands, not included in the allowable harvest base acreage, would grow through successional vegetation stages as influenced by the lack of fire, in most cases, and little or no control of forest pests.

## Lands and Realty Management

Emphasis would be given to acquisition of lands with significance for special plant and animal species, paleontological, historical and archeological values, riparian areas, wildlife habitat, and recreation areas (especially along the Rio Grande River). Acquisition efforts could provide secondary benefits for forest and woodlands management, livestock management, and minerals management.

Lands with riparian zones, wildlife habitat, and recreation areas would continue to be administered by BLM unless, through exchange, the benefits received would equal the benefits exchanged. Disposal of suitable isolated tracts would improve manageability. Exchange of these tracts, however, is preferred when acquisition of desired resources and consolidation of BLM lands would result.

All withdrawals for protection of wildlife habitat and recreation areas would be retained. All six cultural sites, which are either NRHP or eligible for NRHP would be withdrawn. Potential disruptive activities created by mining activities and other nondiscretionary actions would not occur. Powersite withdrawals would be retained pending the outcome of a formal withdrawal review with the exception of the waterpower site withdrawal on the Rio Grande River Corridor, which would be terminated.

Full protection or mitigation of impacts caused by rights-of-way proposals would be provided for the following resources: special plants and animals, paleontological, historical, archaeological, riparian zones, visual, and wildlife habitat. All other ROWs must be compatible with the recreation opportunity spectrum (ROS) guidelines.

## Areas of Special Concern

Resource values on about 138,605 acres (100 percent) would be given special attention to ensure they are not irreparably damaged by any resource use.

## Recreation Management

Intensive recreation management of the Rio Grande River Corridor SRMA (6,016 acres), which includes 1,760 acres of wild and scenic proposal, and Blanca SRMA (7,750 acres) would enhance recreation opportunities on 13,766 acres (3 percent). Extensive recreation management would maintain recreation opportunities on the remaining 506,911 acres (97 percent). Management of Segments A and B of the Rio Grande River Corridor (see Appendix E) as an SRMA would enhance recreation values on 4,256 acres. Management of Segment C of the Rio Grande River Corridor (Appendix E) as a wild and scenic river would enhance the primitive or wilderness type of experience and would protect wildlife on 1,760 acres.

Table 4-12 shows OHV designated acreages.

TABLE 4-12
OHV DESIGNATION
(Resource Enhancement)

| Designation | Acres | Percent |
|---|---|---|
| Open | 102,828 | 20 |
| Limited | 377,745 | 72 |
| Closed | 40,094 | 8 |
| TOTAL | 520,677 | 100 |

An NSO and no disposal of mineral materials on Blanca and the Rio Grande River Corridor SRMAs (which includes 1,760 acres of wild and scenic proposal) and a portion of SPNM would protect 31,136 acres from surface-disturbing activities. Mineral withdrawals on Blanca and the Rio Grande River Corridor SRMAs would protect 12,145 acres from mineral entry.

A nondiscretionary closure on the WSAs recommended for wilderness designation would protect 3,300 acres of wilderness values from mineral activity.

Protection and enhancement of 3,081 acres of riparian zones would benefit recreationists seeking scenic and educational opportunities in these unique environments.

A more intensive level of management on Blanca and Trickle Mountain WHAs, and seasonal restrictions or closures in crucial winter ranges, birthing areas, and aquatic habitat would improve and enhance opportunities for hunting, fishing, and wildlife observation.

Prohibiting forest product harvesting on 23,299 acres of SPNM areas would protect recreation opportunities in scenic and predominantly natural settings.

Acquisition of land adjacent to the Rio Grande River Corridor SRMA through exchange procedures would provide additional public access and reduce conflicts between recreationists and private landowners. Additional land and access would provide increased recreational opportunities.

Management of 10 ACECs would enhance the nonmotorized types of recreation values (hiking, backpacking) present on 17,370 acres of SPNM areas, but would limit OHV dependent use in these areas. Recreation opportunities would be increased and enhanced on the remaining acres. A primitive and wilderness type experience would be available on 1,760 acres of the Rio Grande River Corridor if that segment is designated as wild and scenic by Congress.

Limiting OHV use on 146,370 acres in VRM Class II areas would help protect scenic values.

Closure of 19 cultural sites to OHV use would provide additional protection for cultural values. This closure includes the Cattleguard Folsom site (3,595 acres), which is the only location in the planning area that provides an OHV dune riding recreational opportunity.

Special plant and animal species habitat limited for OHV use would restrict use on 311 acres.

Significant recreational opportunities would be enhanced on Blanca and the Rio Grande River Corridor SRMAs. Protection of semiprimitive recreation values on 23,299 acres would also occur. Dispersed recreational opportunities in the San Luis Extensive Recreation Management Area would be greatly enhanced and increased in this alternative.

## Visual Resource Management

Under this alternative, proposed surface-disturbing activities must meet the allowable class objectives in class II, III, and IV areas.

A restoration project, designed to correct and improve the visually contrasting class IV Blanca Chaining area to VRM Class III objectives, would be implemented on 2,375 acres during the life of the plan. Over the long term, the chaining area would be improved to class II. Refer to Appendix F for more details.

Strict conformance to VRM class objectives would protect visual resources. Controlled light cutting on VRM Class II lands would protect the visual qualities of these areas. VRM class objectives would be protected and/or maintained through proper design of rights-of-way proposals. Management of 10 areas of critical environmental concern would protect the scenic values on 17,690 acres of VRM Class II land and 119,294 acres of VRM Class III land.

Designated OHV use in this alternative would generally maintain or enhance scenic values. Visual resources on 146,370 acres of VRM Class II land and 23,299 acres of semiprimitive nonmotorized area (32 percent of the total) would be protected by OHV closures and limitations. Scenic quality would be altered on 102,828 acres (21 percent) of the planning area that is open to OHV use, and the potential for irreversible adverse impacts would increase.

Management of 28 percent of the planning area (146,370 acres) as VRM Class II would protect outstanding scenic visual resources. These lands include the areas of scenery that provide significant recreation opportunities. Management of the remainder of the area (374,307 acres) as VRM Class III or VRM Class IV would maintain the overall visual character of the planning area, but would allow for visually contrasting projects or disturbances within scattered

localized viewsheds. Wilderness designation would protect the scenic values on 3,300 acres.

## Historical Resources

Five identified significant historical sites (560 acres) would be protected or enhanced and could be used for "public use" and "scientific use." The other 13 noneligible significant historical sites (620 acres) would receive additional protection through the area-wide CRMP.

Special emphasis of an ACEC designation would further protect historical values in the La Garita Wagon Ruts and the Cumbres and Toltec Scenic Railroad sites.

## Archaeological Resources

Eligible sites/districts would be enhanced or protected and could be used for education and scientific purposes. Usage of noneligible sites would be determined through an area-wide CRMP. Cultural values on one NRHP site, Cattleguard Folsom (180 acres), would receive additional protection through ACEC designation.

## Economic Conditions and Social Environment

Local and regional social and economic impacts, national economic values analysis, and impacts on the BLM San Luis Resource Area management costs are addressed in this analysis.

The withdrawal of 17,585 acres would not likely have any impacts on the local economy since these withdrawn lands have a very low potential for locatable minerals.

Closing acres to the disposal of minerals materials would not have significant social or economic impact because of low resource potential of this area.

Additional forage on the allotted lands would be allocated to wildlife. Increased forage supply would result in increased game populations and associated recreational opportunities, which could lead to some increases in ESA income and employment. Improved aquatic habitat and increased fish populations would increase the fish harvest and could improve the quality of the fishing experience with positive economic and social results.

Sale of 55 Mbf of sawtimber would produce some increase in the ESA income employment. The sale of 370 cords of fuelwood annually would support local employment and income.

Land tenure adjustments would occur on a case-by-case basis; therefore, it is not possible to predict any impacts on economic or social conditions.

Insignificant economic benefits from recreation would occur. A net increase of one job over the Existing Management Alternative would occur in businesses providing tourist and recreation sales and services (see Assumptions for Analysis, Table 4-2). The net change in employment would be less than 1 percent.

The impacts on local economy would likely be beneficial, but not large.

BLM SLRA management costs are $650,000 per year compared to benefits of $2,373,190.

Table 4-4 (Assumptions for Analysis) shows impacts to national values from recreation activities within the planning area. The national values for recreation activities are expected to increase about 3 percent over the Existing Management Alternative. The total impact to national values from recreation, range, and forestry would be about $2.37 million.

## Special Status Plant and Animal Species

Acquisition of lands with swales and lake beds would enhance *Cleome multicaulis* communities. Old wells would be cleaned, and new wells would be drilled on currently dry areas to increase the habitat; *Cleome* would be propagated on new wetlands. A net increase of habitat and plant communities would occur. *Astragalus ripleyi* habitat and existing communities would be protected from grazing if needed, and a net increase of the plant community would occur. Riparian and wildlife developments would result in a net benefit to special plants.

Intensive studies, surveys, and analysis conducted in potential habitat areas for special animal species, especially for the black-footed ferret, would increase habitat and populations.

Acquisition of some lands (e.g., Cerro del Ojito Hills and along the adjacent Conejos River) would potentially increase bald eagle habitat.

## Waterpower/Storage

Intensive management of all potential sites with withdrawn land would protect waterpower/storage values. The exception to this is the one site within Segment C of the Rio Grande River Corridor (1,760 acres), which is recommended for wild and scenic designation. If the

recommended wild and scenic river corridor is approved and Congress accepts the recommendation, the withdrawals in this section would be recommended for termination.

Effectiveness of the potential waterpower/storage development would be reduced as a result of wild and scenic designation; however, the site would also be restricted by the Alamosa National Wildlife Refuge.

# RESOURCE PRODUCTION ENHANCEMENT ALTERNATIVE

The following impacts are the net unavoidable effects of this alternative.

## Minerals Management

Under this alternative, approximately 617,251 acres (99.5 percent) of the Federal fluid mineral estate would be open for leasing and 3,620 acres (0.5 percent) would be closed to leasing. Appendix B identifies proposed lease stipulations for resource specific requirements for stipulation waivers, exceptions, and modifications Tables 4-13 and 4-14 list this acreage by leasing category for oil and gas and geothermal resources.

Managing 6,260 acres of bighorn sheep lambing range with a seasonal use stipulation could result in higher exploration, drilling, and development costs and potential scheduling inconvenience.

Managing 4,395 acres of special recreation management areas (SRMAs) and 1,200 acres within the Pike Stockade/ Monte Vista R&PP sites under an no surface occupancy (NSO) stipulation would result in substantially higher (30 to 100 percent) drilling and development costs because of required use of directional drilling (if feasible) from off-site locations.

All Federal fluid mineral estate, with the exception of the 3,620 acres within the incorporated city of Del Norte and the WSAs recommended for wilderness designation, would be open for lease. The 6,260 acres of bighorn sheep lambing range and 7,750 acres of waterfowl habitat under seasonal restriction would not result in significant impacts to fluid minerals. The NSO stipulation on 1,200 acres within the proposed Pike Stockade/Monte Vista R&PP sites and 4,395 acres within the Rio Grande River Corridor SRMA also would not result in a significant impact.

This alternative would identify 617,571 acres (99 percent) of Federal mineral estate as open to entry and location and available for exploration and development under the general mining laws. Since there are no lands within the planning area under mineral withdrawal except the 3,300 acres (1 percent) of WSAs recommended for wilderness designation, possibilities for resource development would be maximized.

Table 4-13
MANAGEMENT OF OIL AND GAS LEASES BY ACRES
(RESOURCE PRODUCTION)

| Management Category | Nominal Potential | Low Potential | Moderate Potential | Total | Percent of Mineral Estate |
|---|---|---|---|---|---|
| Open: | | | | | |
| Standard Lease Terms | 77,066 | 497,030 | 23,550 | 597,646 | 96.0 |
| Seasonal Restrictions [1] | | 7,491 | 6,519 | 14,010 | 2.5 |
| NSO or Similar Constraints [2] | 840 | 360 | 4,395 | 5,595 | 1.0 |
| Closed: [3] | | | | | |
| Nondiscretionary | | | | 3,620 | 0.5 |

[1] Big game crucial winter range, antelope fawning range, and waterfowl nesting areas.
[2] Big horn lambing areas, bald eagle habitat, Pike Stockade R&PP site, Monte Vista park R&PP site, and the Rio Grande SRMA.
[3] City of Del Norte and WSA lands.

Table 4-14
MANAGEMENT OF GEOTHERMAL LEASES BY ACRES
(Resource Production)

| Management Category | Low Potential | Moderate Potential | High Potential | Total | Percent of Mineral Estate |
|---|---|---|---|---|---|
| Open: | | | | | |
| Standard Lease Terms | 510,016 | 77,600 | 9,030 | 597,646 | 96.0 |
| Seasonal Restrictions | 7,491 | 6,519 | | 14,010 | 2.5 |
| NSO or Similar Constraints | 1,200 | 4,395 | | 5,595 | 1.0 |
| Closed: | | | | | |
| Nondiscretionary | | | | 3,620 | 0.5 |

This alternative would identify 616,476 acres (99 percent) within the planning area as open to the disposal of mineral materials to individuals, industry, and government agencies on a demand basis. The 4,395 acres (1 percent) within the proposed Rio Grande River Corridor SRMA would be closed to the disposal of mineral materials. Closure of this area would not result in a significant impact because of low resource potential, inaccessibility, and the presence of numerous alternative sites within the planning area.

## Paleontological Resources

Management under this alternative would generally be passive and similar to the Existing Management Alternative; however, "production" of the resource could be manifested through recreational and commercial collecting of fossils in specified areas. Public awareness and education would also be limited because emphasis would be placed on other resources.

## Riparian Resources Management

Condition ratings for riparian vegetation would remain fairly static, with minor improvements expected as a result of the Ford Creek Riparian Demonstration Area. Condition ratings on the remaining inventoried acres would be as follows: approximately 1,400 acres good to excellent; 74 acres fair; 287 acres poor. Some decline in riparian condition could be expected from vehicle traffic on improperly located and newly constructed roads. Decreased riparian vegetation would be expected from accelerated development of production oriented resources. Development of historic wetlands would add 475 acres of riparian vegetation.

Inventory of an additional 1,413 acres would allow for recognition and maintenance of riparian values in future action plans.

The 15-acre isolated tract on Kerber Creek would remain in poor condition because of limited BLM land ownership and related manageability problems.

There would be no seasonal and no surface occupancy restrictions, and no areas would be closed to leasing, allowing geothermal and/or oil and gas development to occur on 3,230 acres of riparian vegetation. All other areas would remain open to leasing. Losses of vegetation could be expected from any type of development. The extent of this loss would be dependent on the life span of the operation.

Riparian zones on 2,205 acres (67 percent) would be protected from undue and unnecessary damage by the 43 CFR 3809 mining regulations. Elimination of protective withdrawals would allow mining activity to occur on a possible 1,025 acres (33 percent) of riparian vegetation. Impacts on those areas with mining potential would be mitigated, but some short-term losses of vegetation and a reduction in water quality would occur.

There could be some losses of riparian vegetation from mineral material sales and a reduction in condition, depending on the extent of development. Since the Rio Grande River Corridor would be closed to material sales, the riparian zone would be protected. Seasonal limitations in waterfowl habitat areas would protect the vegetation during the closure period.

Implementation of the Poison Gulch AMP (Ford Creek Riparian Demonstration Area) would improve 70 acres of riparian vegetation. Conformance to grazing allotment management plans (AMPs) would maintain fair riparian condition on 74 acres and poor condition on 204 acres, including the upper Rio Grande River Corridor. The remaining 1,400 inventoried acres allotted for grazing would remain in good to excellent condition. Unfenced, accessible springs and reservoirs would continue to be trampled by livestock, which would damage vegetation, redirect surface flows, and reduce species diversity.

Development of historic wetlands for wildlife and fisheries habitat would add 475 acres of riparian wetlands over the life of the plan. Continuance of the Blanca Habitat Management Plan would ensure protection of 1,025 acres of riparian vegetation.

Twenty acres of riparian vegetation would be degraded by timber harvesting activities.

Emphasis on acquisition of riparian zones would be reduced. Riparian values would be acquired only as a secondary benefit, with emphasis on production values. Total riparian acreage would be approximately 3,230 acres. Disposal of isolated tracts with riparian vegetation would reduce the total acreage by 15 acres. The impact of this loss to the total riparian resource would not be significant.

Surface-disturbing activities from vehicle use and earth-moving activity on rights-of-way would cause short-term damage to riparian vegetation. Mitigations would be required to maintain current condition. The riparian area within the Rio Grande River Corridor would receive full protection.

Vehicle management in all WSAs would be according to nonimpairment criteria, which would protect 45 acres of riparian vegetation. Development of recreational facilities would result in permanent losses of vegetation and possibly downward trends, depending on the amount of use.

Protection of *Cleome multicaulis*, which is dependent on saturated soils, would preserve small areas of riparian vegetation. Protection of bald eagle feeding habitat would preserve riparian vegetation and maintain condition.

## Livestock Grazing Management

Forage production would potentially increase by an estimated 10,000 AUMs on the allotted lands based on expected grazing management improvements during the 20-year life of the plan. The use of these potential new AUMs would be provided to livestock forage needs as they become available. The net effect would be beneficial to livestock grazing management within the resource area.

During the life of the plan, there could also be an estimated 30,000 more acres (of the 42,400 acres of unallotted lands) that very likely would become suitable production acres. This potentially would provide for an approximate additional 1,500 AUMs that would be allocated for livestock grazing use. This would be done after complete and regular forage monitoring and appropriate NEPA documentation were carried out (probably an EA).

A temporary loss (4 to 5 years) of 150 AUMs in the Poison Gulch Allotment would occur because of riparian management of the Ford Creek riparian demonstration area.

Forage production on 4,612 acres would increase through wetland habitat management and would only be made available to livestock grazing after objectives for wetland habitat management are met.

Potential adverse impacts to the "C" grazing allotments might occur from land tenure adjustments.

Seasonal limitations on OHV use on approximately 333,000 acres (65 percent) would improve livestock forage and would reduce livestock management problems (e.g., livestock harassment).

The overall net effect to livestock grazing management in the resource area could potentially increase available forage by about 11,500 AUMs over the span of this land use plan.

## Wildlife and Fish Habitat Management

Slight habitat quality increases would occur on 7,750 acres of water bird habitat as a result of intensive wetland management on 1,600 acres and the restoration of 1,175 acres of historical wetlands. Habitat nesting quality could be potentially reduced by the termination of the withdrawal because of unavoidable impacts resulting from mineral development.

Seasonal limitations on an as-needed basis would minimize the capability of avoiding stress to animal populations on crucial wildlife habitats. Increased stress levels on up to 40 acres per year could potentially be expected somewhere on approximately 333,000 acres of crucial species habitat.

Big game forage allocations remaining at 48,000 AUMs would maintain existing big game populations. Additional livestock on crucial winter ranges would increase the probability of conflicts with existing big game populations on 333,000 acres of crucial range during severe winters.

No surface occupancy on 4,395 acres of the Rio Grande River SRMA would maintain existing waterfowl and raptor production in this area. Stress on deer, elk, bighorn sheep, and antelope would increase without seasonal restrictions during the period that big game utilize approximately

333,480 acres of crucial winter range. Over-utilization problems on undisturbed areas could decrease overall condition and health of the herds, and increased mortality and fetal losses could also occur. Seasonal limitations would be placed on 14,010 acres; however, surface disturbance could result in abandonment of portions of 6,260 acres of bighorn sheep lambing range and could hinder waterfowl nesting on 7,750 acres.

Terminating the mineral withdrawals on Blanca WHA would allow surface disturbance from mineral location and entry on 5,550 acres of wetland habitat. Mineral development in intensively managed water bird nesting habitat would hinder successful nesting and reduce reproduction.

Development of grazing systems, land treatment projects, and livestock management practices would improve forage conditions, reduce conflicts between livestock and big game, and enhance distribution of most big game species. Limitations on additional forage allocations to wildlife would increase conflicts for forage where two or more game species share a common crucial winter area.

Productive operable woodland management on 10,688 acres would provide temporary openings, create more forage effect, and encourage species diversity. Commercial forest land management on 4,315 acres of crucial big game winter range would decrease both thermal and hiding cover. This management could also adversely affect big game use on 40,000 acres of adjacent crucial winter habitat by forcing more animals onto adjacent private lands. Harvesting timber during the critical winter period would repel big game species creating forage over-utilization problems on undisturbed areas. This stress would reduce weights and increase susceptibility to disease.

Additional public access would be generally beneficial to wildlife habitat allowing better harvest and population control of game species. Public access, however, during critical winter periods would be detrimental to big game species on crucial winter areas. Additional public access to crucial wetland production areas would be detrimental to water bird production during the breeding period.

SRMA designation for the Rio Grande River Corridor would enhance and protect 4,395 acres of unmanaged waterfowl and raptor habitat. SRMA designation on the intensively managed Blanca WHA, however, might suppress water bird production.

Wildlife habitat would continue to be maintained. A recreation OHV use area on 3,595 acres west of the Great Sand Dunes would increase harassment of wildlife species and deteriorate existing habitat by reducing the already sparse vegetation cover. Habitat destruction and disturbance and harassment of wildlife would continue to occur on BLM land including crucial wildlife habitat.

Increased mineral exploration and extraction, forestry management and harvest, and public use during critical periods could reduce big game populations on 333,000 acres (64 percent) over the long term. The degree of loss would be dependent on the rate of development of these activities.

Construction of roads, pipelines, drill pads, and other surface facilities in or near stream channels would result in increased sedimentation, siltation, water temperatures, channelization, and the loss of organic input and structure. This would potentially degrade aquatic habitat quality over the short term and could result in permanent loss of suitable fish habitat, both at the site and downstream.

Construction of in-channel structures would improve pool/riffle ratios, stabilize streambanks, increase in-stream cover, and reduce sedimentation on 2.5 stream miles of Ford Creek. Maintaining current riparian habitat conditions and trend should also maintain the aquatic habitat in its present condition where the trend is stable.

Aquatic habitat on 21.1 stream miles along the Rio Grande River Corridor SRMA would be improved as a result of improved riparian habitat. Increased streambank cover and stability would lead to decreased water temperatures and sedimentation in these areas. Over the long term, the aquatic habitat, where the condition is static, would remain in its present condition; where trend is down, aquatic habitat would decline. Land treatment projects would increase sedimentation over the short term but would decrease it over the long term.

Road and landing construction, skid trails, stream crossings, and slash disposal areas could cause increased sedimentation, bank degradation, water temperatures, and decreased streambank cover and stability.

Impacts from management of areas of special concern would be the same as in the Existing Management Alternative.

OHV Closures involving the Blanca WHA, Trickle Mountain WHA, and the Rio Grande SRMA would protect the existing shorelines of reservoirs and stream miles of aquatic habitat within these units. Deteriorating streambanks and increased siltation could occur on all stream miles open to OHV.

The increased possibility of mineral activity would reduce aquatic habitat quality in specific areas.

## Forest and Woodland Management

Intensive management of all suitable commercial forests on 5,894 acres (100 percent) would produce 288 Mbf of timber. An additional 1,794 acres of productive operable woodlands, which are presently located in wilderness study areas, could

bring the total of productive operable woodlands to 12,482 acres (100 percent), and produce 660 cords of fuelwood annually.

Road construction could improve access thereby reducing timber harvest costs. Construction of roads, pads, and other surface disturbing activities associated with mineral development would reduce forested acres to a limited degree.

In areas being reforested, as much as 80 percent seedling damage could occur as a result of heavy grazing. This damage would occur over a 6-to 8-year period of time.

Development of cleared corridors would permanently reduce forested acreage. This impact is considered very minor and no reduction in harvest levels is planned.

Road construction could improve access into potential sale areas, thus reducing harvest costs. Development of access for rights-of-way utilities and for mineral extraction would result in a very minor loss of forested acres. Concentrated livestock use could significantly restrict reforestation success.

## Lands and Realty Management

Emphasis would be given to acquisition of lands with mineral resources, high value recreation areas, good quality forest and woodland areas, and to enhance "intensive management" category livestock grazing allotments. Acquisition of riparian areas and wildlife habitat would also be considered.

Existing withdrawals would be recommended for termination, and no new withdrawals would be recommended.

Access acquisition to enhance resource values (e.g., mineral development, recreation, timber sales, etc.) would occur.

Utility corridors would be designated per WUG with one exception. Development of major utility facilities with stipulations would be considered on a case-by-case basis. The Rio Grande River Corridor would be closed to all major utilities.

## Areas of Special Concern

In this alternative, wildlife, scenic, and recreational values would be protected on Trickle Mountain/Ford Creek WHA and Blanca and the Rio Grande River Corridor SRMAs (56,666 acres), which is 41 percent of the total 136,984 identified acres for special management. Special management to protect wildlife, recreation/scenic, cultural, wild and scenic river, and other unique values on the remaining 80,318 acres (59 percent) would not occur. Recreation OHV opportunities would be enhanced however, on 3,595 acres.

## Recreation Management

Intensive recreation management of Blanca and the Rio Grande River Corridor SRMAs would enhance recreational opportunities on 12,145 acres (2 percent). Extensive recreation management would maintain recreational opportunities on the remaining 508,537 acres (97 percent). Seven areas totaling 13,970 acres have been identified as having potential for intensive recreational development. One of these could provide OHV riding opportunities west of the Great Sand Dune National Monument and would enhance OHV use on 3,595 acres (1 percent). Additional developments on both the intensive and and extensive recreational areas would both increase the number of sites and enhance the diversity of opportunities, which would expand choices of both concentrated and dispersed types of outdoor recreation. Management of Segments B and C of the Rio Grande River Corridor as an SRMA would enhance developed recreational opportunities on 4,395 acres; however, the wilderness or primitive type experience could not be ensured on 1,750 acres.

Table 4-15 shows OHV designated acreages.

TABLE 4-15
OHV DESIGNATION
(Resource Production)

| Designation | Acres | Percent |
|---|---|---|
| Open | 457,751 | 88 |
| Limited | 62,926 | 12 |
| Closed | 0 | 0 |
| TOTAL | 520,677 | 100 |

An NSO on leasable minerals and closure to sale of mineral materials in the Rio Grande River Corridor SRMA would protect 4,395 acres from surface-disturbing activities. A nondiscretionary closure on the WSAs recommended for wilderness designation would protect 3,300 acres of wilderness values from mineral leasing. These acres would also be closed to disposal of mineral materials and location under the 1872 Mining Laws.

Enhancement of 3,230 acres of riparian zones would not occur; therefore, benefits of scenic and educational opportunities would be lost to recreationists.

Limiting OHV use in big game birthing areas would affect OHV use seasonally.

Temporary disruption of dispersed types of recreational activities could occur on 150 acres annually. Additional BLM land available through access acquisition and road development and improvement would increase opportunities for camping, hunting, hiking, sightseeing, four-wheeling, snowmobiling, and cross-country skiing. A gradual degradation of semiprimitive nonmotorized areas would occur over the life of the plan.

Rights-of-way for utility development could increase recreation access.

Management of Trickle Mountain/Ford Creek WHA and Blanca and the Rio Grande River Corridor SRMAs would enhance and increase recreation opportunities on 56,666 acres. Protection of the primitive and wilderness type experience on 1,750 acres of the Rio Grande River Corridor would not occur.

Significant recreation opportunities would be enhanced in Blanca and the Rio Grande River Corridor SRMAs in this alternative. Motorized recreational opportunities would be available on the 3,595-acre OHV riding area west of the Great Sand Dunes National Monument. Dispersed recreational opportunities in the San Luis Extensive Recreation Management Area would be enhanced. Recreational opportunities dependent on a natural setting (e.g., scenic viewing, experience of solitude), however, could be adversely affected. Semiprimitive nonmotorized recreational opportunities and other natural settings, however, would decrease over the life of the plan.

Recreational OHV opportunities would be available on 457,751 acres (88 percent). Limited recreational OHV opportunities would be available on the remaining 62,926 acres (12 percent) and there would be no areas closed.

## Visual Resource Management

Only land in designated wilderness areas would receive adequate protection in this alternative. Other significant visual resources would not be adequately protected.

Mineral development in the planning area would be expected to alter landscape characteristics in a few localized viewsheds.

Forest and woodland product harvest would alter landscape characteristics of scattered localized viewsheds.

The scenic quality of 19,000 acres of class II areas would be slightly degraded over the long term from development activities associated with rights-of-way in these areas.

Visual quality would be slightly degraded on 457,751 acres (88 percent) open to OHV use. Dispersed motorized vehicle activity would tend to degrade the visual quality of 146,370 acres of VRM Class II areas.

Over the long term, visual resources on 146,370 acres of class II areas would be degraded by trails, roads, and other disturbances. Surface disturbance contributing to this degradation would result from various rights-of-way, OHV use, forest and woodland product harvesting, mineral exploration, and hunting activities.

## Historical Resources

Historic values on 18 significant sites (1,180 acres) would not be protected and would receive either "discharged use" or "public use" consideration. Further degradation would occur on these 18 sites.

## Archaeological Resources

Archaeological values on noneligible sites would not be protected and would receive "discharged use" and further degradation would occur.

## Economic Conditions and Social Environment

Local and regional social and economic impacts, national economic values analysis, and impacts on the BLM San Luis Resource Area management costs are addressed in this analysis.

All 617,251 acres of Federal fluid mineral estate would be available for lease. Any resulting development of these resources would be difficult to predict; however, a positive effect on royalty income and income and employment would occur for the ESA.

Economic benefits associated with the mineral potential of locatable minerals and mineral materials would occur on 617,251 acres.

Suitable but unallocated AUMs would be available for allocation to ranchers. Any increases in AUMs could result in financial benefits for the affected ranching operations.

Any loss in wildlife habitat could result in loss of hunter and angler days and would result in losses of income and employment in the planning area.

Sale of 288 Mbf of sawtimber represents no increase and would have a small positive impact on local income and employment. An increase of $838 would result from the sale of 660 cords of fuelwood, which would help offset

residential energy costs and produce about $5,874 in Federal revenue. To the extent purchases would be made by commercial fuelwood cutters, local employment and income would be supported.

Land tenure adjustment would occur on a case-by-case basis; therefore, it is not possible to predict any impacts on economic or social conditions.

Economic benefits from recreational opportunities would decrease. The overall economic loss would be concentrated on those businesses providing tourist and recreation sales and services (see Assumptions for Analysis Table 4-2). Available jobs would decrease from 118 to 115.

The cumulative impacts on the local economy would likely be beneficial, but not large.

BLM SLRA management costs are $650,000 per year compared to benefits of $2,353,547.

Table 4-4 (Assumptions for Analysis) shows impacts to national values for measured activities within the planning area. The national values for these activities are expected to be the same as the Existing Management Alternative. Total impact to national values from recreation, range, and forestry would be about $2.35 million.

### Special Status Plant and Animal Species

Impacts would be the same as the Existing Management Alternative.

### Waterpower/Storage

No impacts would likely occur to waterpower or reservoir values if all withdrawals were terminated. Management of areas with potential waterpower or reservoir sites and intensive site inventory would provide enhancement for these values.

## PREFERRED ALTERNATIVE

The following impacts are the net unavoidable effects to this alternative.

### Minerals Management

Under this alternative 617,251 acres (99.5 percent) of Federal fluid mineral estate would be open for leasing and 3,620 acres (0.5 percent) would be closed to leasing. Appendix B identifies proposed lease stipulation for resource specific requirements for stipulation waivers, exceptions, and modifications. Tables 4-16 and 4-17 list this acreage by leasing category for oil and gas and geothermal resources.

As a matter of policy, fluid mineral operations would not be allowed within the 3,230 acres of riparian resources unless such activity could be fully mitigated to the satisfaction of the authorized officer. The implementation of this policy should not result in a significant impact to fluid mineral resources as all such areas are 300 feet or less in width. Some inconvenience may occur as a result of this requirement; however, no fluid resources would be lost.

Managing 6,260 acres of bighorn sheep lambing range under a no surface occupancy requirement would result in substantially higher (30 to 100 percent) drilling and development costs as directional drilling if feasible would be required. If for technological and/or economical reasons directional drilling could not be conducted, the potential fluid resources within these areas would be foregone. The seasonal use restriction on 17,140 acres of crucial antelope winter and fawning range would place a severe restriction on these lands as occupancy would be restrained from December 15 to July 1 of each year. This combination of seasonal use restrictions would only provide for occupancy from July 1 to December 14. The management of 384,105 acres of crucial big game winter range and crucial waterfowl areas under a seasonal use restriction could result in higher exploration, drilling, and development costs in addition to potential scheduling problems.

The management of 4,395 acres of fluid mineral estate within the Rio Grande River Corridor SRMA (which includes the 1,760-acre wild and scenic segment), 2,000 acres within the Flat Top semiprimitive nonmotorized area, and 1,200 acres within the Pike Stockade/Monte Vista park R&PP sites would be under a no surface occupancy stipulation. This NSO management would result in substantial cost increases (50 to 100 percent) for exploration and development because of the requirement to use directional drilling, if possible, to access the fluid mineral potential of these areas. If directional drilling were not feasible, the potential fluid resource of these lands would be lost.

All Federal fluid mineral estate would be available for leasing with the exception of the 320 acres within the incorporated town of Del Norte and the 3,300 acres of WSAs recommended for wilderness designation. Management of 219,291 acres under standard lease terms would ensure the exploration for and potential development of fluid minerals from these lands. The management of 384,105 acres under a seasonal use stipulation would result in higher exploration and development costs and scheduling problems for the

## TABLE 4-16
## MANAGEMENT OF OIL AND GAS LEASES BY ACRES
## (Preferred)

| Management Category | Nominal Potential | Low Potential | Moderate Potential | Total | Percent of Mineral Estate |
|---|---|---|---|---|---|
| Open: | | | | | |
| Standard Lease Terms | 18,061 | 199,900 | 2,530 | 220,491 | 35.0 |
| Seasonal Restrictions [1] | 70,230 | 293,455 | 20,420 | 384,105 | 62.0 |
| NSO or Similar Constraints [2] | 1,155 | 11,100 | 400 | 12,655 | 2.5 |
| Closed: [3] | | | | | |
| Nondiscretionary | | | | 3,620 | 0.5 |

[1] Big game crucial winter range, antelope fawning range, and waterfowl nesting areas.
[2] Big horn lambing areas, SPNM on Flat Top, and the Rio Grande SRMA, which includes the 1,760-acre wild and scenic portion.
[3] City of Del Norte and WSA lands.

## TABLE 4-17
## MANAGEMENT OF GEOTHERMAL LEASES BY ACRES
## (Preferred)

| Management Category | Low Potential | Moderate Potential | High Potential | Total | Percent of Mineral Estate |
|---|---|---|---|---|---|
| Open: | | | | | |
| Standard Lease Terms | 187,721 | 30,360 | 2,410 | 220,491 | 35.0 |
| Seasonal Restrictions | 332,455 | 45,030 | 6,620 | 384,105 | 62.0 |
| NSO or Similar Constraints | 10,445 | 2,210 | | 12,655 | 2.5 |
| Closed: | | | | | |
| Nondiscretionary | | | | 3,620 | .05 |

operator/lessee. Any increase in exploration and/or development costs could result in a potential loss of fluid mineral production in the planning area. A no surface occupancy requirement on 13,855 acres for recreation and wildlife would result in substantially higher drilling and development costs or possible loss of fluid resource from these lands. The adverse impact of this leasing stipulation would be especially significant in this planning area because of the limited fluid resource information currently available and the inability to obtain such information because of the exclusion of surface operations from these lands.

This alternative would identify 605,921 acres (98 percent) of Federal minerals as open to entry and location and available for exploration and development under the general mining laws. The continuation of existing and new withdrawals of the Blanca Wildlife Habitat/Special Recreation Management Area (7,750 acres) and the Pike Stockade and Monte Vista R&PP sites (1,200 acres), as well as the U.S. Forest Service administrative sites (200 acres), the Rio Grande Wild and Scenic River segment (1,760 acres), six eligible NRHP sites (740 acres), and WSAs recommended for wilderness designation (3,300 acres) should not result in a significant impact because of the low potential of the areas for locatable minerals. Total acres closed to mineral entry and location would be 14,950 (2 percent). The closure of 2,000 acres of OHV use and the designation of ACECs encompassing a total of 119,052 acres of Federal lands would result in increased cost and inconvenience for mining claimants/operators because of the requirement for filing and approval of a plan of operations.

This alternative would identify 601,162 acres (97 percent) of the planning area as open to the disposal of mineral materials with a minimum of use restrictions. Mineral material resources from these lands would be available to private and governmental agencies through sale or free use. The management of 384,105 acres (62 percent) of the planning area under a season of use restriction could result in scheduling inconvenience and loss of mineral material resources. The capital improvements cannot be used throughout the year; therefore, the resource would be uneconomical to produce. Impacts from seasonal use restrictions could be significant in the Los Mogotes and San Luis Hills areas because of the moderate to high potential of these areas for cinders and the limited resource of this type available in the planning area. The closure of 19,709 acres (3 percent) to mineral material disposal would eliminate these lands from development of the available resources.

## Paleontological Resources

Under this alternative, an intensive inventory would be initiated to determine the scope and kind of actual resources present within the planning area. All the significant resources, vertebrate and invertebrate, would be protected and developed for public education opportunities and research. These significant locations would be retained in public ownership and closed to OHV, surface occupancy, and other physical disturbance. Offering selected sites to the interested public as special educational and collecting areas would enhance the overall understanding and protection of these resources.

## Riparian Resources Management

Riparian condition would remain good to excellent on approximately 1,400 acres. Management objectives to improve riparian zones would result in expected improvement in the vegetation condition on 220 acres. An additional 180 acres in poor condition would improve if both sides of the Rio Grande River Corridor SRMA could be fenced. Fifteen acres would remain in poor condition.

Acquisition and development of historic wetlands, development of wetlands currently managed by BLM, and acquisition and management of other riparian areas would increase riparian acreage. This would provide a more diverse and productive environment and benefits to all resource users. A net increase would occur under this alternative; however, some wetlands in scattered tracts could be lost because of land tenure adjustments. Development of historical wetlands for wildlife habitat would provide an additional 1,370 acres of riparian vegetation.

Any large scale development of locatable minerals in riparian zones would cause a decline in condition. Increased recreation use and consequent OHV use would also result in a decline in condition where recreation use is concentrated.

Inventory of an additional 1,413 acres would allow for recognition of riparian values in future management actions.

The 15-acre isolated tract on Kerber Creek would remain in poor condition because of limited BLM land and related manageability problems.

Development of leasable minerals would not occur unless it could be fully mitigated. Riparian condition would remain static on 3,230 acres.

Approximately 1,300 acres would be closed to mineral entry for locatable minerals because of protective measures for other resources (e.g., WSAs, Rio Grande River Corridor which includes the 1,760-acre wild and scenic portion, etc.).

The 43 CFR 3809 regulations would prevent undue and unnecessary damage to the vegetation on the remaining acres. Losses of vegetation and a reduction in water quality would be expected, however, if any large scale development occurs.

Since mineral sales would not be allowed in riparian zones, plant condition would remain the same on 3,230 acres.

Changes in grazing practices would help improve 150 acres of riparian vegetation currently in poor or fair condition. Conformance to most existing grazing management plans would maintain good or excellent condition on 1,400 acres. Incorporating riparian objectives into allotment management plans would result in benefits to riparian vegetation on the uninventoried 1,413 acres.

Development of historic wetlands for wildlife and fisheries habitat would improve and/or expand 1,370 acres of riparian vegetation in the following areas: Blanca WHA, Dry Lakes, and Flat Top ponds.

Emphasis on acquisition of riparian areas would be increased to enhance management capabilities by consolidating ownership and providing additional acres of riparian vegetation.

Designation and management of the Trickle Mountain ACEC/WHA, Blanca WHA/SRMA, and Rio Grande River Corridor ACEC/SRMA (which includes the 1,760-acre wild and scenic portion) might provide an incentive for expanding and/or improving riparian vegetation in these areas.

Development of new recreation sites would result in some permanent loss (10 to 20 acres) of riparian vegetation. Increased recreational use along the Rio Grande River Corridor SRMA (which includes the 1,760-acre wild and scenic portion) would cause localized disturbance from trampling and OHV use. Limited OHV designations on 3,230 acres would help prevent degradation in riparian zones. OHV limitations, however, are often disregarded, and new trails and roads could occur through some riparian zones. Since riparian zones are a focal point for dispersed recreation, as this type of recreation increases, trampling of the vegetation and OHV traffic would also increase. Some decline in riparian condition would be expected in localized areas, especially those where recreation receives special emphasis.

Protection of *Cleome multicaulis*, which is dependent on saturated soils, would preserve small areas of riparian vegetation. Enhancement of habitat for this plant would expand riparian zones by a small amount. Any improvement or expansion of bald eagle feeding habitat would improve or increase riparian vegetation.

## Livestock Grazing Management

Forage production would potentially increase by an estimated 10,000 AUMs on the allotted lands based on expected grazing management improvements during the 20-year life of the plan. These increases would be divided between livestock (4,000 AUMS) and nonlivestock uses (6,000 AUMs for wildlife, soils, watershed, etc.). The net effect would likely be beneficial to livestock grazing management and as well as to the nonlivestock uses within the resource area.

During the life of the plan, there also could be an estimated 30,000 more acres (of the 42,400 acres of unallotted lands) that very likely would become suitable production acres. This potentially would provide for an approximate additional 1,500 AUMs that would be allocated between livestock (600 AUMS) and nonlivestock use (900 AUMS) with a net beneficial effect to livestock. This would occur after thorough vegetation resource base monitoring.

Incorporating riparian objectives into AMPs could potentially result in additional limitations on livestock operators, increases in operational costs, and temporary loss in AUMs authorized.

Forage increases would occur on 5,332 acres (Blanca WHA) as a result of continued wetland habitat management on 2,257 acres and implementation of wetland habitat management on an additional 3,075 acres. This loss of a potential increase in AUMs would be insignificant to livestock grazing.

Transferring 2,340 acres of BLM land currently grazed by livestock in the San Luis Lake area to the National Park Service and/or the Colorado Division of Parks and Outdoor Recreation would eliminate 60 acres of three "custodial management" category allotments currently available to livestock grazing.

Seasonal limitations to OHV use on approximately 390,000 acres (76 percent) and closures on 11,584 acres (2 percent) would reduce livestock forage damage and management problems created by use of roads in the spring.

The overall net effect to livestock grazing management in the resource area could be an increase of available forage by about 4,600 AUMs over the span of this land use plan.

## Wildlife and Fish Habitat Management

Significant habitat quality increases would occur on 7,750 acres as a result of intensive wetlands management on 1,600 acres and the restoration of 1,175 acres of historical wetlands within the Blanca WHA. Numbers of water birds produced

would increase significantly. Extensive management would improve conditions on 155 acres of wetland in the Flat Top, Mishak Lakes, and Dry Lakes area. Interagency cooperation could restore 580 acres of historical wetlands in the previously mentioned areas contributing significantly in approaching the target numbers in the draft DOW water bird plan for the San Luis Valley.

Allocation of 60 percent of the additional forage produced to nonlivestock use, if needed, would improve nongame habitats. Existing crucial big game wintering areas would be maintained or slightly improved.

Minimized disturbance through restrictive use stipulations on big game crucial winter range and birthing areas, bald eagle roosting habitat, raptor nesting habitat, and water bird nesting habitat would decrease stress. Condition and health would improve and mortality and birthing losses would decrease for the affected species on 382,639 acres. Other benefits include improved distribution and decreased big game utilization of adjacent private lands.

No surface occupancy would be placed on bighorn lambing range and 4,395 acres of raptor nesting areas along the Rio Grande River Corridor (which includes the 1,760-acre wild and scenic segment). Seasonal limitations would be placed on approximately 333,000 acres of crucial big game winter range and 7,750 acres of crucial water bird production wetland areas. NSO and seasonal limitations on crucial winter range would reduce stress on big game populations, thereby reducing mortality and fetal losses and improving the overall condition and health of the herds.

The withdrawal on the Blanca Wildlife Habitat Area would protect 7,750 acres (including the Emperius tract) of wetland habitat. The withdrawal of 1,760 acres on the wild and scenic portion of the Rio Grande River Corridor would enhance wildlife values, particularly raptor habitat.

The exclusion of mineral material sales in the Rio Grande River Corridor SRMA (which includes the 1,760-acre wild and scenic segment), defined riparian zones, part of the Flat Top portion (2,000 acres) of the San Luis Hills ACEC, and bighorn sheep lambing areas would protect the values on 15,885 acres. Seasonal limitations would be placed on approximately 333,000 acres of big game crucial winter range and 7,750 acres of wetlands. These limitations would reduce stress to big game populations during the critical period of use.

Restoration and protection of 3,230 acres of riparian habitat would provide additional forage and cover for big game, waterfowl, and nongame species. The prey base for raptors and other predators would be improved. In-channel structures and improvements would provide food and habitat for waterfowl, big game, and nongame species.

Forage conditions on big game crucial winter range would generally improve with continued development of grazing systems and improved management practices. Conflicts would also be reduced between livestock and wildlife on crucial big game winter ranges.

Both thermal and cover requirements for big game on 4,315 acres of commercial forest lands would be maintained, and in some areas present conditions would be improved within these stands. Seasonal closures in bighorn sheep lambing areas should maintain present lambing levels. Limiting individual winter harvest timber operations to 80 acres or less of crucial winter range between December 15 and April 30 should not cause major impacts to wintering big game.

Designation and management of Los Mogotes, Trickle Mountain, San Luis Hills, Rio Grande River Corridor, and Blanca as ACECs would have a positive effect on wildlife values. ACEC designation of other areas would generally enhance wildlife values. Management under an SRMA designation on the Blanca WHA and Rio Grande River Corridor would complement both recreation and wildlife.

SRMA designation for the Rio Grande Corridor would enhance and protect 4,395 acres of unmanaged waterfowl and raptor habitat. Limited OHV designations (travel restricted to designated roads) would maintain existing habitat on 50,805 acres. Seasonal OHV closures would reduce stress to wildlife on 389,755 acres during critical periods. Habitat destruction and the disturbance and harassment of wildlife would occur on 127,240 acres of BLM land open to OHV use, which includes the remaining crucial winter habitat for big game. The Rio Grande River Corridor SRMA/ACEC includes the 1,760-acre segment recommended for wild and scenic designation.

Road and pad construction and pipeline development in or near stream channels would potentially result in loss of streambank vegetation, which would result in increased sedimentation, water temperatures, and channelization.

Placer operations, which involve dredging, vegetation removal, and streambank disturbance, would have adverse impacts on aquatic habitat systems. Water quality, water temperatures, bank and channel stability, and sedimentation would all be potentially adversely affected by these management actions.

Gravel pits or other mineral material excavations occurring in or adjacent to stream channels would potentially have adverse short-term impacts on bank and channel stability. Sedimentation at both the site and downstream would be potentially increased, resulting in deterioration of water quality.

Restoration and protection of 1,370 acres of riparian habitat would maintain the aquatic habitat in its present condition where the trend is stable. Structures placed in Ford Creek

would improve pool/riffle ratios, stabilize streambanks, increase in-stream cover, and reduce channelization, streambank erosion, and sedimentation on 2.5 stream miles.

Intensive grazing management on 21.1 miles of stream aquatic habitat would improve aquatic conditions as a result of improved riparian habitat along the Rio Grande River Corridor SRMA, which includes the 8.8-mile wild and scenic segment.

Road construction across aquatic areas could increase sedimentation, streambank degradation, and water temperatures and decrease streambank cover.

Acquisition of additional stream miles of aquatic habitat would occur. Disposal of aquatic habitat would not occur except for lands within the San Luis Lakes and Mishak Lakes area, which would go to NPS, DPOR, DOW, and U.S. Fish and Wildlife Service. Designation of Trickle Mountain WHA, Blanca WHA/SRMA, and the Rio Grande River Corridor SRMA as ACECs would protect and enhance aquatic values. Closing areas along streams to OHV use would maintain or improve aquatic habitat. The net impact would be beneficial to aquatic habitat.

## Forest and Woodland Management

Managing 5,769 acres (98 percent) of commercial forest lands for sustained-yield production would result in offering for sale an annual harvest volume totaling 288 Mbf of timber. Woodland management on 11,992 acres (96 percent) of productive operable woodlands would result in an annual harvest potential of 633 cords of fuelwood. Annual harvests of forest products would improve the existing age class distribution and increase growth rates by reducing impacts of forest pests and implementing intensive management practices. Species diversity would be maintained, and legal and physical access would be increased.

Seasonal limitations on harvest in bighorn sheep lambing areas would reduce sale marketability on 335 acres of productive operable woodlands and 85 acres of commercial forest land. The requirement to maintain adequate thermal cover on 17,761 acres of forested land would reduce the effectiveness of forest pest control projects.

Special harvesting techniques necessary to maintain the existing values in six ACECs would not reduce total final harvest volumes, but would increase costs for each sale.

Management of wildlife habitat, ACECs, cultural resources, and visual resources would maintain the commercial forest or productive operable woodland allowable harvest base acreage. Seasonal limitations on harvesting would reduce or preclude bidding on some tracts. Residual low quality and pest infested stands probably would not be treated nor placed into productive management without a successful sale program and would result in reduced harvest levels.

Approximately 345 acres of commercial forest land (CFL) and 1,794 acres of productive operable woodlands are located in WSAs. Because of steep terrain, the 345 acres of CFL would not be included in the allowable cut level even if the WSAs are not designated wilderness.

Four hundred and ninety acres of productive operable woodlands are located in two WSAs, which have been recommended for wilderness designation. Withdrawing these acres would reduce the annual harvest level by 27 cords (3 acres). An annual harvest of 633 cords of fuelwood could be produced from 11,992 acres (68 acres annually) of productive operable woodlands if the WSAs not recommended for wilderness designation are returned to multiple use management.

## Lands and Realty Management

Emphasis would be given to acquisition of lands with significance for special plant and animal species, wildlife habitat, cultural values, riparian areas, and recreation areas (especially along the Rio Grande River Corridor). Acquisition could enhance forest and woodland management, livestock management, and minerals management.

Lands with special plants and animals, cultural values, riparian zones, significant wildlife habitat, and recreation areas would not be available for disposal, except through exchange if the benefits received would equal or exceed the benefits exchanged Disposal of isolated tracts would improve manageability and perhaps enhance one or more other resources if an exchange of an isolated tract would result in acquisition of a desired resource value. Exchanges would be used to consolidate large blocks of BLM.

All withdrawals for protection of wildlife habitat and recreation areas would be retained. All six cultural sites, which are either NRHP or eligible for NRHP, would be withdrawn.

Full mitigation of impacts would be necessary for the following sensitive resources: special plants and animals, cultural, riparian zones, visual, and wildlife habitat. Rights-of-way (ROWs), including major utilities in the designated corridors or those requested by the public, would be required to bypass these sensitive areas.

ROWs or corridors would not occur in 23,299 acres of semiprimitive nonmotorized areas. All other ROWs must be compatible with recreation opportunity spectrum (ROS) guidelines.

## Areas of Special Concern

Wildlife, recreation, scenic, cultural, wild and scenic river, and other unique values would be given special attention on 126,802 acres (92 percent) of the total 136,984 acres identified for special management. These areas are Sand Castle, San Luis Hills/Flat Top, Blanca, Trickle Mountain, and the Rio Grande River Corridor. Special management to protect wildlife, recreation/scenic, cultural, and other unique values on the remaining 10,182 acres (8 percent) would not occur.

The proposed ACECs that currently have other designations, such as the Cumbres and Toltec Scenic Railroad (a National Register property), would be designated ACECs in addition to their present designations. The use of the ACEC designation, however, would not affect prior status.

## Recreation Management

Intensive recreation management of Blanca and the Rio Grande River Corridor SRMAs (which includes the 1,760-acre wild and scenic segment) would enhance recreation opportunities on 12,145 acres (2 percent). If compatible with other resources, an OHV riding area would be established, which could also enhance recreation opportunities on 2,370 acres (0.5 percent). Extensive recreation management would maintain recreation opportunities on the remaining 508,852 acres (98 percent).

Management of Segments B and C of the Rio Grand River Corridor as an SRMA would enhance recreational opportunities on 4,395 acres. Management of Segment C as a wild and scenic river would enhance the primitive or wilderness type experience on 1,750 acres.

Table 4-18 shows OHV designations by acreage and percent of planning area.

TABLE 4-18
OHV DESIGNATION
(Preferred)

| Designation | Acres | Percent |
|---|---|---|
| Open | 127,240 | 24 |
| Limited | 388,137 | 75 |
| Closed | 5,300 | 01 |
| TOTAL | 520,677 | 100 |

An NSO on the Blanca and Rio Grande River Corridor SRMAs and the Flat Top portion of the San Luis Hills ACEC would protect 6,395 acres from surface-disturbing activities. Mineral withdrawals on the Blanca and Rio Grande River Corridor SRMAs and the Pike Stockade/Monte Vista R&PP sites would protect 10,710 acres from mineral entry. Closure to disposal of mineral materials on the Rio Grande River Corridor SRMA, Cumbres and Toltec Scenic Railroad, and a portion of SPNM on Flat Top would protect 10,219 acres. A nondiscretionary closure on the WSAs recommended for wilderness designation would protect 3,300 acres of wilderness values from mineral leasing. These acres would also be closed to disposal of mineral materials. The Rio Grande River Corridor SRMA includes the 1,760-acre segment recommended for wild and scenic designation.

Enhancement of 1,735 acres (54 percent) of riparian zones would benefit recreationists seeking scenic and educational opportunities. These same opportunities would be lost, however, on 1,495 acres (46 percent) of riparian zones that would not be enhanced.

Management of the Blanca WHA/SRMA and Trickle Mountain WHA, crucial winter ranges, birthing areas, and riparian habitat through seasonal OHV limitations would improve opportunities for hunting, fishing, and wildlife observation. Protection of nesting waterfowl and birds of prey in the 21.1-mile segment of the Rio Grande River Corridor would reduce boating use, but would also preserve the primitive setting

Additional public land gained through access acquisition and road development and improvement would increase camping, hunting, sightseeing, four-wheeling, snowmobiling, and cross-country skiing opportunities. Temporary disruption of dispersed types of recreation activities could occur on 150 acres annually.

Management of two WHAs (Blanca and Trickle Mountain); two SRMAs (Rio Grande River Corridor and Blanca); and six ACECs (Sand Castle, San Luis Hills, Los Mogotes, Cumbres and Toltec Scenic Railroad, the Rio Grande River Corridor, and Trickle Mountain) would enhance and improve recreation opportunities on 126,802 acres. Recreation opportunities would not be enhanced on the remaining 10,182 acres. A primitive and wilderness type experience would be available on 1,760 acres of the Rio Grande River Corridor if designated as wild and scenic by Congress.

Protection of six NRHP sites would close 740 acres to OHV use. The remaining 3,595 acres included in the OHV riding area in the Sand Castle ACEC would be open to OHV in accordance with the CRMP for the ACEC.

Significant recreational opportunities would be enhanced on Blanca and the Rio Grande River Corridor SRMAs.

Wildlife related recreation activities in two SRMAs would be maintained. River based recreation activities would be encouraged on 21.1 miles of the Rio Grande River Corridor SRMA. Protection of the semiprimitive character of Flat Top (2,000 acres) and the wilderness characteristics on 3,300 acres would occur. Dispersed recreational opportunities in the San Luis Extensive Recreation Area would be enhanced. The Rio Grande River Corridor SRMA includes the 8.8-mile segment recommended for wild and scenic designation.

## Visual Resource Management

Proposed surface-disturbing activities would meet the allowable class objectives in existing class II, III, and IV areas. Existing objectives would be changed as follows: (1) The foreground area of the Rio Grande River Corridor (41.5 miles) would be changed from VRM Class III to II, which would result in improvement of VRM resources in class III areas. (2) All public land west of U.S. Highway 285 would be changed from VRM Class II to III, which would result in degradation of visual resources in class II areas.

Strict application of VRM Class II objectives would protect and enhance visual resources in the Cumbres and Toltec Scenic Railroad ACEC (3,824 acres) and the Rio Grande River Corridor SRMA/ACEC (21.1 miles/4,395 acres).

A restoration project, designed to correct and improve the visually contrasting class IV Blanca Chaining area to VRM Class III objectives, would be implemented on 2,375 acres during the life of the plan. Over the long term, the chaining area would be improved to class II. For more detail refer to Appendix F.

Conformance to VRM class objectives would protect visual resources. Mineral development could be expected to alter landscapes in a few localized viewsheds.

Forest harvesting practices would be implemented on 1,660 acres of VRM Class II land in scattered localized viewsheds over a period of 120 years. Woodland harvest practices would be implemented in a dispersed pattern on 7,685 acres of VRM Class II land over a period of 175 years. The effect from harvest would be much less during the 15- to 20-year life of the plan. Annual harvests of approximately 633 cords of fuelwood from 68 acres of productive operable woodland could be concentrated in the Blanca Chaining area to implement the VRM restoration project over a period of 10 years.

Development of a major utility corridor west of U.S. Highway 285 would result in managing some VRM Class II land as VRM Class III, and degradation of visual resources would occur.

Designation of six ACECs (119,052 acres or 23 percent) would protect the scenic values on 18,410 acres of VRM Class II land and 64,535 acres of VRM Class III land.

Visual resources on 95,000 acres (65 percent) of VRM Class II land and 5,300 acres (23 percent) of SPNM would be protected by OHV closures and limitations. Scenic quality would be altered on 127,240 acres (24 percent) that is open to OHV use, and the potential for irreversible adverse impacts would increase.

Managing 24 percent of the planning area (127,370 acres) as VRM Class II would protect outstanding visual resources. These lands include the areas of scenery that provide significant recreational opportunities. Managing the remainder of the area as VRM Class III or VRM Class IV would maintain the overall visual character of the planning area, but would allow for visually contrasting projects or disturbances within scattered localized viewsheds. The Blanca Chaining project could restore 2,375 acres of class IV to VRM Class III. Wilderness designation would protect the scenic values on 3,300 acres. The 8.8-mile segment of the Rio Grande River Corridor would be nominated for inclusion in the Wild and Scenic River System, which would protect scenic values on 1,760 acres. More intense recreational use would be encouraged on the remaining 12.3 miles of the river corridor. The semiprimitive nonmotorized setting would be protected on approximately 2,000 acres of Flat Top. Development of a utility corridor could change 19,000 acres (13 percent) of VRM Class II land to VRM Class III.

## Historical Resources

All 18 identified historical significant sites would be protected. Those five sites eligible for inclusion in the National Register of Historic Places would be enhanced and protected under a "scientific use," "public use," or "management use" category. The Cumbres and Toltec Scenic Railroad would receive additional protection through special management.

## Archaeological Resources

All significant sites would be protected. Eligible site/districts would be enhanced and protected under "management," "scientific," or "public use" categories. Sand Castle/ Cattleguard Folsom area would receive additional protection through an ACEC designation.

## Economic Conditions and Social Environment

Local and regional social and economic impacts, national economic values analysis, and impacts on the BLM San Luis Resource Area management costs are addressed in this analysis.

Stipulations placed on fluid mineral leasing would not have measurable economic or social impacts. Any increased operating costs resulting from the stipulations would lower the potential for economic production. In addition, economic benefits associated with the unknown oil and gas potential would not be achieved.

Withdrawal of 14,950 acres would not likely have an impact on the local economy since these withdrawn lands have a very low potential for locatable minerals. Closing 19,709 acres to disposal of mineral materials would not have economic or social impact because of low resource potential in the planning area.

Current trend and condition associated with management of 32,400 AUMs would be maintained. No net increases nor decreases would occur.

Increases in forage supply would result in increased game populations in crucial areas and associated recreational activities and could bring some increases in area income and employment. An increase of one job would be expected (see Assumptions for Analysis Table 4-2). Slight improvement of aquatic habitat and increase in angler days would be expected; however, the impact on economic and social conditions in the planning area would be less than 1 percent.

Sale of 288 Mbf of sawtimber represents no increase. The sale of 633 cords of fuelwood would help offset residential energy costs and produce about $5,697 in Federal revenue. Local employment and income would benefit to the extent purchases would be made by commercial fuelwood cutters.

Land tenure adjustments would occur on a case-by-case basis; therefore, it is not possible to predict any impacts on economic or social conditions.

Economic benefits from recreation would be less than 1 percent and would be concentrated on those businesses providing tourist and recreation sales and service (see Assumptions for Analysis Table 4-1). Available jobs would increase from 118 to 119.

The cumulative impact on the local economy would likely be beneficial, but not large.

BLM SLRA management costs are $650,000 per year compared to benefits of $2,405,252.

Table 4-4 (Assumptions for Analysis) shows impacts to national values from measured activities within the planning area. The national values for these activities would be expected to increase about 2 percent over the Existing Management Alternative. The total impact to national values from recreation, range, and forestry would be about $2.4 million.

## Special Status Plant and Animal Species

Acquisition of lands containing swales and lake beds would enhance *Cleome multicaulis* communities. Old wells would be cleaned and new wells would be drilled on currently dry areas to increase the habitat and *Cleome* would be propagated on new wetlands. Appropriate livestock grazing management would result in a net increase of *Astragalus ripleyi* population. Riparian and wildlife developments would result in a net benefit to special plants.

Intensive studies, surveys, and analysis conducted in potential habitat areas for special animal species, especially for the black-footed ferret, would increase habitat and populations.

## Waterpower/Storage

Intensive management of all potential sites with withdrawn land would protect waterpower/storage values. The exception to this is the one site within Segment C of the Rio Grande River Corridor (1,760 acres), which is recommended for wild and scenic designation. If the recommended wild and scenic corridor is approved and Congress accepts the recommendation, the withdrawals in this segment would be recommended for termination.

Effectiveness of the potential waterpower/storage development would be reduced as a result of wild and scenic designation; however, the site would also be restricted by the Alamosa National Wildlife Refuge.

# COMPARISON OF ALTERNATIVE CONSEQUENCES

Table 4-19 shows a scaled comparison of consequences on resources in each alternative. These figures were determined by an analysis based on the following management actions and particular resources/resource uses.

| -3.0 | -2.0 | -1.0 | 0 | +1.0 | +2.0 | +3.0 |
|---|---|---|---|---|---|---|
| High | Medium | Low | None | Low | Medium | High |
| Adverse Impacts (Negative) | | | Net Impacts | | Beneficial Impacts (Positive) | |

## TABLE 4-19
## SCALED COMPARISON OF ALTERNATIVE CONSEQUENCES

| Management Action | Existing Management | Natural Resource Enhancement | Resource Production Enhancement | Preferred |
|---|---|---|---|---|
| Fluid Minerals Management | +2.0 | -2.0 | +3.0 | -1.0 |
| Locatable Minerals Management | +1.5 | -0.5 | +2.0 | -0.5 |
| Mineral Materials Management | +2.5 | -2.5 | +3.0 | -1.0 |
| Paleontological Resources | -1.0 | +2.0 | -1.0 | +2.0 |
| Riparian Resource management | +1.0 | +2.0 | +1.0 | +2.0 |
| Livestock Forage Management | +2.0 | -0.5 | +0.5 | +1.5 |
| Wildlife and Fish Habitat Management | +1.5 | +2.0 | -0.5 | +1.5 |
| Forest and Woodlands Management | -2.0 | -3.0 | -1.5 | -0.5 |
| Land and Realty Management | -2.0 | -1.0 | +1.5 | +1.0 |
| Areas of Special Concern | -3.0 | +2.5 | -2.0 | +1.5 |
| Access and Transportation Management | +1.0 | -0.5 | +1.0 | +1.0 |
| Recreation Management | -3.0 | +1.5 | +3.0 | +1.5 |
| Visual Resource Management | -2.0 | +2.5 | -1.5 | -1.0 |
| Historical Resources | -0.5 | +1.0 | -1.0 | +0.5 |
| Archaeological Resources | -1.0 | +1.5 | -0.5 | +1.0 |
| Economic Conditions and Social Environment | 0.0 | +1.0 | +0.5 | +1.0 |
| Special Status Plant and Animal Species | -1.0 | +2.5 | -0.5 | +2.5 |
| Waterpower/Storage | -0.0 | -1.0 | +0.5 | -0.5 |

# CHAPTER 5

# PUBLIC INVOLVEMENT

# CHAPTER 5

# PUBLIC INVOLVEMENT

Chapter 5, consisting of four sections, describes the scoping process and public involvement prior to and during the preparation of this document. Consistency with resource management plans of other agencies; the Bureau plan process (including a schedule of events); a list of Bureau people involved in the preparation; and a partial listing of various agencies, organizations, and individuals who were contacted for input are addressed in separate sections.

Formal and informal efforts have been made to involve the public, other Federal agencies, and appropriate state and local governments. Several points of public involvement are mandated, which have been completed and are discussed in this chapter.

## PLAN CONSISTENCY WITH OTHER PLANS

The Bureau of Land Management (BLM) planning regulations require that RMPs be ". . .consistent with officially approved or adopted resource-related plans of other Federal agencies, State and local governments and Indian tribes, so long as the guidance and resource management plans are also consistent with the purposes, policies, and programs of Federal laws and regulations applicable to public lands . . . ."

Throughout preparation of the draft RMP/EIS, various methods, from telephone calls to public meetings, were used to ensure that consistency requirements were met. This segment of Chapter 5 summarizes and highlights these measures.

During development of the "Topics To Be Addressed In The Plan," the "Management Situation Analysis," and the preparation of this draft RMP/EIS, letters and response forms were sent to local, state, and Federal agencies, interested individuals, and Indian tribes requesting information on land use plans or policies that would affect or be affected by the RMP. Community and county governments were contacted to determine whether public lands would be needed for community expansion purposes within the life of the RMP. Letters were also sent to affected utility companies requesting information on the proposed locations of new utility corridors.

Reviews and a consistency analysis have been completed on any and all land use plans that could have some direct affect on public land management within the planning area. Some examples of these are: various county land use plans and zoning ordinances, Colorado Comprehensive Outdoor Recreation Plan, Colorado Wildlife Strategy Plan, Rio Grande National Forest Land Use Plan, various economic development documents, Great Sand Dunes National Monument Management Plan, etc.

Briefing meetings were held at nine different times and places during preparation of the draft RMP/EIS with four Indian tribes (Taos Pueblo, Jicarilla, Southern Ute, Navajo), state and Federal legislative officers in Colorado and New Mexico, the Bureau of Reclamation, U.S. Fish and Wildlife Service, numerous state governmental agencies in Colorado (e.g., the Colorado Division of Wildlife, Colorado Division of Parks and Outdoor Recreation, Colorado Lands Commission, etc.), and numerous other groups to discuss BLM alternatives, local plans, and needs for further coordination. Meetings were held with each of the counties to discuss their local planning and how it relates to what is planned on public lands. Also several county commissioner briefings were completed. Meetings were held with several of the surrounding counties, including those adjacent counties in New Mexico, to compare local planning with planning on public lands. In addition, letters were sent to numerous other agencies and interest groups offering to meet to discuss consistency issues.

These contacts promoted closer coordination with BLM and affected agencies/interest groups and were instrumental in the formulation of plan alternatives, including the Preferred Alternative. All of these agencies, businesses, and organizations received copies of the draft and will receive copies of the final RMP/EIS. Some of these specific plans and documents referenced here are listed in chapter 1 in Table 1-4. In addition, the governors of Colorado and New Mexico have been asked to review the draft RMP during the 60-day period for consistency with state and local plans prior to approval.

At this point in our land use planning process, nothing within the Preferred Alternative appears to be substantially inconsistent with any of the local, regional, state, or Federal plans that have been reviewed or discussed.

CHAPTER 5

# PLAN PROCESS INVOLVEMENT

The Draft San Luis Resource Management Plan/ Environmental Impact Statement (DRMP) was prepared by an interdisciplinary team of resource specialists from the Bureau of Land Management (BLM). This team consisted of specialists from the San Luis Resource Area Office (SLRA), the Canon City District Office (CCDO), and the Colorado State Office (CSO).

Writing of the document itself began in the fall of 1987; however, preceding this, a complex process of issue identification, data gathering, and other activities occurred. This included identification of issues to be addressed in the plan, development of resource and resource user information, public participation, interagency coordination and consultation, input of data into a geographic information system (GIS), and the preparation of a management situation analysis (MSA). Records and files of this process, including the public involvement records, the GIS data, and the MSA, are available from the SLRMP Team Leader in the Canon City District Office.

Consultation and coordination with agencies, organizations, and individuals occurred in a variety of ways throughout the planning process. Various news releases, newsletters, open houses, meetings, briefings, special mailings, user input groups, etc. were used to accomplish the consultation and coordination.

This section of this chapter summarizes those formal and informal steps taken to consult and coordinate with the public at large, interested individuals, groups, and Federal, state, and local government entities during the preparation of this draft RMP. There has been full compliance on the mandated points of public involvement and comments, and responses will be included in this chapter in the final RMP.

Table 5-1 is a summary of steps taken to complete consultation and coordination in this planning effort:

Table 5-1
PLAN PROCESS INVOLVEMENT SUMMARY

| Time Period | Consultation Item | Description of Involvement |
|---|---|---|
| Summer 1987 | Federal Register Notice | Public notice in Federal Register, news releases, and newsletters mailed. |
| Summer 1987 | Topics of Concern (issues with conflict, management concerns, and other considerations) | Public open houses, news releases, and newsletters |
| Fall 1987 | Agency briefings | Federal, state, and local governmental briefings |
| Fall 1987 | Alternative development | Public meetings, news releases, and newsletters |
| Spring 1988 | User input work groups on MSA, topics, and alternatives | Special mailings, public meetings, news releases, and group meetings |
| Summer 1988 | Briefings to government officials | County and other local governmental briefings (e.g., commissioners, planners, administrators, etc.) |
| Winter 1989 | PDRMP/PDEIS | Preliminary draft review of the document by the user input groups and BLM district/state office; public news releases, and newsletter mailings. |
| Summer 1989 | DRMP/DEIS | Briefings to Federal, state, and local agencies |
| Summer 1989 | DRMP/DEIS | Mailings of the draft document, Federal Register Notice of Availability, news releases, newsletter, public hearings |

# LIST OF PREPARERS

The draft resource management plan for the San Luis Resource Area was prepared by 28 people within the BLM Canon City District Office, the San Luis Resource Area Office, and the Colorado State Office. Names, assignments, education, and experience are listed in Table 5-2.

Table 5-2
LIST OF RMP/EIS PREPARERS

| Name | Assignment | Education | Years of Experience |
|---|---|---|---|
| Dennis Zachman | Area Manager | BS-Outdoor Recreation Management | 14.5 |
| Dave Taliaferro | Project Manager | BS-Recreation Administration<br>MS-Recreation Resources | 17.0 |
| Stan Specht | Plan Coordinator for CSO Liasion | BS and MLA-Landscape Architecture<br>MUP-Urban Planning | 21.0 |
| Ken Goodrow | Special Plant and Animal Species Technical Coordination | BS-Agriculture<br>BS-Botany-Ecology | 25.5 |
| Mike Dwyer | GIS Coordinator for CSO | AAS-Civil Engineering<br>BS-Applied Math/Computer Science<br>MPA-Policy Analysis | 06.5 |
| Ade Neisius | Quality Control (Asst District Manager for Land and Renewable Resources) | BS-Forest Management | 23.5 |
| Bev Neuben | Editor/Writer, Printing/Reproduction Coordination, and Administrative Coordination | On-job training; formal training sessions on English, grammar, writing, editing, and format | 17.5 |
| Kevin Andersen | Geology, Minerals, and Topography | BS-Geology | 10.5 |
| Royce Wheeler | Livestock Management, Vegetation | BS-Range Management | 20.5 |
| Bill Miller | Lands and Realty Management | BS-Forestery | 15.5 |
| John Schwarz | Wildlife Habitat Management | BS-Wildlife Science | 17.5 |
| John Wilson | Forest and Woodlands, Wilderness, Recreation, and Visual Resources | BS-Forestry | 25.5 |
| Fran Ackley | Riparian Resource Management | BS-Range/Forest Management | 5.5 |

Table 5-2 (Continued)

| Name | Assignment | Education | Years of Experience |
|---|---|---|---|
| Fred Martinez | Access and Transportation, Hazards | Drafting Certification; on-job training; and formal engineering training | 10.5 |
| Scott F. Archer | Climate and Air Quality | BS-Environmental Science and Chemistry | 12.0 |
| Jerry Harmon | Soils | BS-Agronomy and Soils | 31.0 |
| Howard Wertsbaugh | Water Resources | BS-Watershed Management | 24.5 |
| Jeanette Pranzo | Economic Conditions and Social Environment | MA-Economics | 17.5 |
| John Beardsley | Paleontology and Archaeology | BA-Anthropology | 12.5 |
| Frederic Athearn | History and Areas of Special Concern | Ph.D-History | 16.0 |
| Joe Kuka | Waterpower/Storage | BS-Geophysical Engineering | 12.5 |
| Harold May | Fire Management | On-job training and formal fire training | 12.0 |
| Bob Wick | Wilderness, Recreation, Visual Resources, Wild and Scenic River | BS-Forestry<br>MS-Wildland Recreation Management | 03.0 |
| Carl Zulick | GIS Applications Technical Assistance for WO | BS-Environmental Design;<br>MLA-Landscape Architecture | 10.5 |
| Elner Rush | Typing and & Clerical Support | Business College | 20.5 |
| Peggy Forbes-Crowl | Art Work | Free-lance | 5.0 |
| Judy Field | Project/GIS Coordinator | On-job training; formal computer training | 4.5 |
| Steve Kastner | GIS/Moss Data Entry | BS-Geological Engineering | 2.5 |

| Canon City District Support | Colorado State Office Support |
|---|---|
| Donnie Sparks, Management Direction<br>Allice Knox, Administrative Support | Steve Gregonis, GIS/MOSS Oper.<br>Dave Taylor, GIS Tech. Assis.<br>Jim Sorenson, GIS Tech. Assis.<br>Leigh Wellborn, Typesetting<br>Linda Mechura, Coordinator (Word Processing/Typesetting) |

# CONTACT/DISTRIBUTION LIST

During preparation of this draft RMP/EIS, various Federal agencies, state and local governments and agencies, interest groups, and individuals were contacted for information and data. This draft document will be mailed to numerous agencies, organizations, and individuals. A partial list of contacts and recipients follows:

**Federal Agencies**

Adivsory Council on Historic Preservation
Library of Congress, Unit X
U.S. Army Corps of Engineers
U.S. Department of Energy
U.S. Department of Transportation
U.S. Environmental Protection Agency
U.S. Federal Highway Administration
U.S. Pentagon, Asst. Sec. of the Air Force
U.S. Airforce

USDA Forest Service
- Office of Environmental Coordination
- Rocky Mountain Regional Office
- Alamosa Ranger District
- Carson National Forest
- Rio Grande National Forest
- Conejos Ranger District
- Del Norte Ranger District
- Saguache Ranger District

USDA, SCS
- Center Field Office
- La Jara Field Office
- Monte Vista Field Office

USDI
- Office of the Environmental Project Review

USDI, BLM
- Washington Office, Division of Planning and Environmental Coordination
- Colorado State Office
- New Mexico State Office
- Taos Resource Area

USDI, Bureau of Mines

USDI, Bureau of Reclamation
- Div of Environmental Affairs, Washington
- Southwest Regional Office, Texas
- Closed Basin Project, Alamosa

USDI, Fish and Wildlife Service
- Chief, Div of Envir Coord, Washington
- Regional Office, Denver
- Alamosa and Monte Vista Wildlife Ref.

USDI, Geological Survey
- Envir. Affairs Program, Virginia
- Geologic Division, Denver

USDI, National Park Service
- Div. of Envir. Compliance
- Great Sand Dunes N.M.
- Rocky Mountain Region

U.S. Senate
- Senator William Armstrong

**State Agencies**

Colo. Board of Land Commissioners
Colo. Department of Health
Colo. Department of Highways
Colo. Department of Local Affairs
Colo. Department of Natural Resources
Colo. Div. of Parks & Outdoor Recreation
Colo. Division of Mines
Colo. Division of Water Resources
Colo. Division of Wildlife
- Area Supervisor, Monte Vista Southwest Regional Office

Colo. Environmental Coordinator
Colo. Federation Mineralogical Society
Colo. Forest Service
- Alamosa
- Fort Collins

Colo. Geological Survey
Colo. Historical Society
Colo. Mining Association
Colo. Plans Coordinator
Colo. Soil Conservation Board
Colo. State Clearinghouse
Colo. Historical Society
Colo. State University
Colo. Water Conservation Board
Colo. Wildlife Federation Inc.

**Local Agencies**

City of Alamosa
City of Antonito
County of Conejos
County of Costilla
County of Mineral
County of Rio Grande
County of Saguache
Rio Grande Soil Cons District
Rio Grande Water Cons District

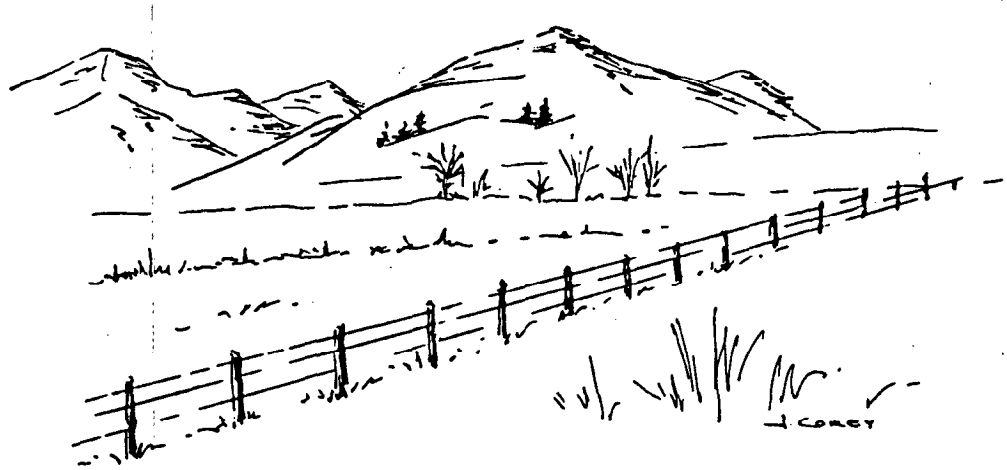
## CHAPTER 5

**Individual, Group, or Agency**

Aguilar Energy Company
Alamosa Valley Courier
Allison, Mark
Amax Incorporated
American Rivers
American Wilderness Alliance
Amoco Production Company
Anderson, Phil
ANPU, S. B.
Anschutz Corporation
Armagst, Bob
Atkins, Larry E.
Atlas Corporation
Benson, Harold
Birdsall, Fred
Blackgoat, Fernando
Bouchard, Thomas
Bryant, Pete
Callison, Charles H.
Catalano, Dwight
Cattlemen's Association
Chevron Resources Company
Chevron USA Inc.
Club 20
Coleman, Jim
Coleman, Polly
Colo. Association of 4WD Clubs
Colo. Association of Motorcyclists
Colo. Association of Soil Conservation Districts
Colo. Boat Owners Task Force
Colo. Cattleman's Association
Colo. Counties, Incorporated
Colo. Environmental Coalition
Colo. Farm Bureau
Colo. League of Women voters
Colo. Legislative Council
Colo. Motorcycle Dealers Association
Colo. Motorcycle Trail Riders Association
Colo. Native Plant Society
Colo. Outdoor Education Center
Colo. Snowmobile Association
Colo. Sports Riders Association
Colo. Woolgrowers Association
Colville, Ruth M.
Conejos County Woolgrowers
Congdon & Carey Association
Conservation Committee
Coyle, Kevin J.
Crook, Deane A.
Crowthee, Ed
Cunningham, Kirk
Davey, Earl
Davey, John L.
Davis, Floyd M.
Denver Public Library
Duran, Michael
Environmental Center
EXXON Company USA
Farm Credit Services
Fentress, George H.
Fettes, Joe Jr.
Frye, Ken
Galatowitsch, Sue
Gallegos, George
Garretson, Gary
Goldcrest, LTD.
Grennel, Bill
Gulf Oil Corporation
Gumaer, Dorothy V.
Harris, Jim
Harvey, Norman
Heller, Clive
High Chateau
High Country News
Homestake Mining Company
Hughes, Mark
Independent Petro. Assoc. of Mtn. States
Jensen, Debbie
Johnston, Bob Jr.
Jones, Brad
Kerr McGee Center
Koepsel, Kirk
Koppra, Lynn
Kramer, Larry
Kuntz, David W.
Lazy "T" Inc.
Linden, Julie K.
Luther, Marlin
Martin, Susan A.
Martinez, Jim
McClellan, Roz
Minerals Exploration Coalition
Mobil Exploration and Producing
Molycorp, Inc.
Montgomery, Dave
Mountain Bike Specialists
Mueller, Eleanor C.
National Wildlife Federation
Natural Resource Defense Council, Inc.
Nature Conservancy
Naumann, Tamara
Nielsen, Ed
Noranda Exploration, Inc.
Oaks, Floyd, Jr.
Oliver, Chuck

**Individual, Group, or Agency (continued)**

Oliver, Mike
Pacific Coast Mines
Phelps Dodge Corporation
Public Land Institute
Puckett, Catherine
Rampart Range M-C Management Committee
Red Mountain Clay Company
Rehberg, Jeff
Rocky Mountain Enduro Club
Rocky Mountain Oil and Gas Association
Rocky Mountain Trails Association
San Luis Valley
San Luis Valley Regional Development
Scherling, Bev
Schmittel, Kenneth
Schultz, Robert L.
Shell Oil Company
Sierra Club
Sierra Club Legal Defense Fund
Sierra Outfitters & Guides of Taos Inc.
Sisemore, Larry
Smithsonian Institution
Southern Peaks Regional Library
Sowards, Vaughn
Spearman, Mike
Spero, Vince
Stahlecker, Paul
Stansfield, John
Steck, John
Strait, Richard A.
Suiter, Gary
Sylvester, Thomas
Temple, Danny
Texaco Incorporated
The Wilderness Society
Torbit, Steve
Union Carbide Corporation
United Four Wheel Drive Association
University of Colorado
Valdez, Ernest
Valdez, Rudolph
Valdez, Virgil
Van Gieson, J.R.
Ward, Larry
Welch, Jack
Wellman, Bill
Western Archeological Consultants, Inc.
Western Colorado Congress
Western Energy Company
Western Utility Group
Wetherill, Clayton
Whitten and Schreck Grading
Whitten, Don
Whitten, George, Jr.
Widhelm, Bert
Wiley, Kent
Wilson, Thurman
Yeager, Kelly
Young, J.T.
Zillich, Kay



# APPENDICES

# APPENDIX A

# BLM PLANNING PROCESSS

# TABLE A-1

## SUMMARY OF PLANNING CRITERIA FOR ISSUES AND CONFLICTS

| Topic | Description |
|---|---|
| **Land Tenure Adjustment** | Meet demands for use in accordance with Section 203 of FLPMA. |
| | Ensure that lands in areas of consolidated public land and/or mineral ownerships, wilderness study areas, special management areas, critical or important wildlife habitat, and lands identified as moderate to high potential for the presence of leasable, locatable, or salable mineral resources will not generally be designated for disposal. |
| | Meet present and future Bureau program demands by acquiring land which would: consolidate land ownership and complement resource programs; provide access to public lands; and complement Blanca Wildlife Habitat Area or other special management areas and critical winter range areas. |
| **ROW Management** | Avoid specially designated areas. |
| | Reduce proliferation of new ROW corridors. |
| | Coordinate with surrounding/bordering landowner/agency management. |
| | Locate ROW corridors in areas to avoid high/critical resource values or management programs. |
| | Maintain compatible ROW corridor uses. |
| | Analyze trespass ROWs for public or governmental benefits; consider elimination or authorization through sale, lease, ROW grants, etc. |
| **Public Land Access** | Acquire access to high value public resources; include pass-through access to other agency managed lands. |
| | Restrict access to protect critical resources (i.e., critical wildlife winter range, cultural sites, nesting waterfowl) or to limit resource damage. Existing rights or mineral development of high mineral values would continue. |
| | Minimize impacts on adjacent landowners. |
| **OHV Use** | Designate areas open to OHV use that have high present or potential use and where user or resource conflicts do not exist. |
| | Designate areas closed to OHV use that have high user or resource conflicts and where it is necessary to protect a fragile, very sensitive, or a potentially high value resource. |
| | Designate areas limited to OHV use to minimize impacts to resources and where total closure is not necessary. |
| | Close or limit OHV use where trespassing on nonpublic land would be encouraged if left open. |
| | Allow OHV use on public land to conform with leases, permits, ROWs, land use authorizations, or mining claim operations. |

Table A-1 (Continued)

| Topic | Description |
|---|---|
| **Suitability for Exploration/Development of Mineral Resources** | Ensure public lands remain open and available for mineral exploration and development unless, because of national interest, withdrawal or other administrative action (closure) is clearly justified. |
| | Specify locations in the resource area that are suitable, suitable with limitations, or unsuitable for oil and gas development, mineral materials development, geothermal development, etc. Consideration would be given to the potential for successful utilization of the mineral resource and mitigation of conflicts with other resources and/or sensitive areas. |
| | Meet present and future demands for mineral materials and give priority to meeting the needs of governmental entities. Avoid competition with private sources in areas where such materials are readily available. |
| | Formulate adequate management practices and mitigative measures to provide for successful rehabilitation of mineral resource developments. |
| | Encourage and facilitate the development of mineral resources and provide for economically and environmentally sound exploration, extraction, and reclamation. |
| **Special Management Designations** | Develop management planning in this RMP for San Luis Valley WSAs to consider both wilderness and nonwilderness uses. Describe congressional nondesignation management. If designated wilderness, activity plans would be developed for the areas. |
| | Consider the special management designations of ACECs and National Wild and Scenic River. |
| | Determine which areas contain important unique historical, cultural, scenic, or recreational values; fish and wildlife resources; habitats; or other natural systems or processes of significance to be considered for special management designations. |

## TABLE A-2

## SUMMARY OF PLANNING CRITERIA FOR IMPORTANT MANAGEMENT CONCERNS

| Topic | Description |
|---|---|
| **Special Forest/Wildlife Management** | Harvest allowable cut to the extent possible. |
| | Accommodate local harvest techniques and demand periods to the extent possible. |
| | Select forest harvest techniques to provide for wildlife habitat components such as cover and space. |
| **Riparian/Wetlands** | Retain manageable existing and historical riparian and wetland areas on public lands. |
| | Protect or improve riparian and wetland areas through multiresource management. |
| | Identify and describe all riparian and wetland areas, including historical wetlands. |
| **Cultural** | Develop CRMPs for sites on public lands with scientific, socio-cultural, educational values, etc. |
| | Describe significant historical values on public lands. |
| | Manage sites with consideration of their cultural values. |
| | Describe those sites on public lands with "traditional cultural values." |
| | Develop CRMPs for sites on public lands with educational, preservational, recreational, research, and other public values. |
| | Define significant archeological values on public lands |
| | Provide for the greatest public benefit, including education, protection and research. |
| | Describe significant paleontological values on public lands by type and distribution. |
| **Fire** | Designate areas where fire suppression is required to protect life and property. |
| | Develop actions to protect public lands from fire. |
| | Designate areas where planned or unplanned fire using prescriptions developed by fire specialists may enhance resources on public lands. |
| | Evaluate effectiveness of cost for all initial attack techniques. Identify slope classes, fuel types, and fire occurrence to facilitate designation of fire management analysis zones and representative fire locations. |
| | Consider fire effect and compare between fire dependent and fire independent ecosystems. |
| | Use fire strategy determined by prescriptions developed by fire specialists to enhance public land resources. |

Table A-2 (Continued)

| Topic | Description |
|---|---|
| **Threatened and Endangered Species** | Apply management actions to protect and conserve Federal and state species. |
| | Apply actions that would prevent populations and communities of sensitive species from becoming threatened or endangered. |
| | Apply management practices or actions that would protect and or improve areas with threatened, endangered, rare, or sensitive species and endemic vegetative communities. |
| | Describe locations of T&E species on public lands |
| **Social/Economics** | Analyze the local and regional social/economics and the extent of dependency on products, services, or uses of public land. |
| | Analyze planned actions on public lands for economic efficiency. |
| | Assess impacts that may occur on community attitudes and social traditions. |
| | Describe demographic, economic, and social effects of program recommendations. |
| **Visual Resources** | Describe areas with significant visual resources using the VRM system. |
| | Apply management actions to protect significant visual resources using VRM guidelines. |
| **Forest and Woodlands** | Compare forest and woodland resource values with esthetics, wildlife, range, etc. |
| | Decide where forest management plans are needed and determine a priority for completion. |
| | Describe lands according to potential for commercial forest and woodland growth and harvest. |
| | Determine demand for forest products based on market conditions. |
| | Develop efficient plans for harvest and long-term management and protection of forest and woodland values. |
| **Forage** | Redefine the objectives for range and wildlife in AMPs where the objectives cannot be monitored or are vague or unnecessary. |
| | Incorporate into the RMP usable alternatives and applicable decisions resulting from the existing grazing EIS. |
| | Use monitoring data to modify livestock use. |
| | Give preference to wildlife forage needs in critical winter areas on BLM. |
| | Set vegetative objectives to promote a desirable healthy vegetative community, which are not detrimental to other resources. |

Table A-2 (Continued)

| Topic | Description |
|---|---|
| **Recreation** | Propose actions to meet demand for recreation on public lands. |
| | Describe areas with significant recreation opportunities using ROS. |
| | Describe public demands for recreation on public lands. |
| | Apply management actions to maintain or improve recreation resources. |
| **Wildlife Habitat** | Resolve resource conflicts on critical wildlife areas. |
| | Develop and apply management actions to preserve or improve critical wildlife habitat with priority to winter areas, birthing areas, and migration routes. |
| | Describe lands or areas that provide critical habitat for wildlife. |
| **Noxious Weed Control** | Cooperate with weed control districts in controlling noxious weeds. |
| | Propose actions on public lands to curb and repress communities of noxious weeds. |
| **Water Rights** | Acquire water rights for the development of resource programs. |
| **Waterpower/Storage** | Describe sites with potential for waterpower/storage, which have no limitations nor use restrictions. |
| | Describe sites with potential for waterpower/storage, but are considered unsuitable because of other resources. |
| | Describe sites currently withdrawn for waterpower/storage purposes either as recommended or not recommended for that withdrawal to continue. |
| | Apply management actions water storage that do not detract from potential for waterpower/ storage. |

# APPENDIX B
# FLUID MINERALS MANAGEMENT

# APPENDIX B

# FLUID MINERALS MANAGEMENT

This appendix is subdivided into three major sections: Section 1 describes the typical development, use, and abandonment of an oil and gas well; section 2 provides a listing of standard design and operating practices for fluid mineral activities, and section 3 lists special stipulations that would be added to new fluid mineral leases as necessary to meet the management objectives of this draft RMP. For additional information on fluid minerals, refer to San Luis Oil and Gas/Geothermal Technical Report.

## DESCRIPTION OF TYPICAL OIL AND GAS ACTIVITIES

This section provides an abbreviated description of the procedures and operations involved in a typical oil and gas exploration and/or development project. The information will provide the reader with a better understanding of the methods and practices used by industry and the BLM in the exploration for and development of oil and gas resources. Detailed information concerning the permitting process is in 43 CFR parts 2800, 3040, 3100 and appropriate Onshore Orders/Notice to Lessees.

Oil and gas exploration and development activities progress through four phases that are, in part, sequential and may overlap in time: preliminary exploration; exploratory drilling; development; and abandonment. Leases are obtained before the second phase (exploratory drilling).

### Preliminary Exploration

Petroleum exploration occurs in unexplored portions of areas where petroleum is known or thought to occur in commercial quantities. An area where petroleum is thought to occur in commercial quantities is known as a frontier or rank wildcat area. With declining known oil and gas supplies, it has become profitable to explore for oil and gas in less promising geological provinces and in areas where the climate, terrain, depth of deposits, and other obstacles have discouraged previous efforts. Increasingly sophisticated exploration techniques, improved oil and gas drilling, and transportation technologies have also enhanced prospects for locating, extracting, and marketing petroleum resources.

Regardless of where or why, the goal of exploration is always to find where oil is likely to occur, how much may be there, and how deep it is; specifically, the goal is to detect probable traps, quality and type of reservoir, source rocks, and the thickness and age of the sedimentary rocks in the area.

During the preliminary exploration phase of an area, geological and geophysical exploration occur.

#### Geological Exploration

Where the bedrock geology of an area is well exposed, it is often possible to predict where oil might gather. The potential traps (anticlines, faults, or formations with varying porosity) can sometimes be located with the aid of published geological maps, aerial photos, and landsat imagery. Occasionally, additional data will be gathered by aircraft. Low altitude reconnaissance flights, frequently at elevations of 100 to 500 feet, help identify rock outcrops that can be studied later on the ground. Next, one or more geologists may examine and sample the rock outcrops in the area and map the surface geology. Geological exploration can be performed with little surface damage; four-wheel drive pickups, motorcycles, or all-terrain vehicles could be used to cover the area.

#### Geophysical Exploration

Surface geology is not always accurately indicated by surface outcroppings. In such cases, geophysical prospecting is used. Three subsurface characteristics are measured by geophysical methods including gravitational field, magnetic field, and seismic characteristics.

#### Gravity and Magnetics

Gravitational and magnetic surveys involve small portable units that are easily transported via light ground vehicles such as four-wheel drive pickups and jeeps or aircraft. Off-highway vehicle traffic is common in these two types of surveys. Sometimes, small holes (approximately 1 by 2 by 2 inches) are hand dug for instrument placement along the survey lines.

## APPENDIX B

### Seismic Surveys

Seismic surveys are the most popular of the geophysical methods and seem to give the most reliable results. A seismic survey is a method of gathering subsurface geological information by recording impulses from an artificially-generated shock wave. The common procedure used in seismic surveys on land consists of creating shock waves and recording, as a function of time, the resultant seismic energy as it arrives at groups of vibration detectors (one-half to 5-pound seismometers, or "jugs" arrayed on the ground at spaced intervals). These arrays of seismometers are connected to a recorder truck that receives and records the reflected seismic energy.

The seismic sensors and energy source are located along lines on a 1- to 2-mile grid. Surveys may be laid out in excess of 40 miles in a series of grid patterns or in a single line.

Where possible, existing roads are used to conduct seismic operations. Some lines may require clearing of vegetation and loose rock to improve access for trucks. Each mile of line, cleared to a width of 8 to 14 feet, represents disturbance of about 1 acre. Completely clearing a seismic line is unusual. Most lines that run where no roads exist are not bladed except at wash crossings. Vehicles travel over land with a bulldozer towing them through rough spots or in sandy areas.

In remote areas where there is little known subsurface data, a series of short seismic lines may be required to determine the characteristics of the subsurface formations. After this, seismic lines would be aligned to make seismic interpretations more accurate. Although alignment may be fairly critical, spacing of the lines can often be changed up to a quarter of a mile on 1-mile grid before the results will affect the investigation program. This allows some adjustment for existing or alternate access of lines.

Seismic methods are usually referred to by the various methods of generating the shock wave. The following are some of the more common methods.

### Thumpers

The thumper method involves dropping a steel slab weighing about 3 tons to the ground several times in succession along a predetermined line. The weight is attached by cables to a crane on a special truck.

### Vibroseis

The vibrator (or vibroseis) method is widely used and is replacing the explosive method in accessible areas. A typical operation would use 3 or 4 large trucks or tractors, each equipped with a vibrator mounted between the front and back wheels, 4 or 5 support vehicles, and a crew of 10 to 15 people.

The vibrator pads (about 4 feet square) are lowered to the ground and vibrators on all trucks are triggered electronically from a recording truck. After the information is recorded, the trucks move forward a short distance and the process is repeated.

### Dinoseis

The dinoseis method can be used with a variety of vehicles. It consists of a bell-shaped chamber mounted underneath a vehicle. The seismic energy is imparted to the ground through the spark ignition of a propane and oxygen mixture confined in the chamber. This method causes little surface damage.

The above referenced methods have similar surface-disturbing factors in common. Generally, the methods involve travel either on existing roads or off-road with four to five energy source trucks (usually weighing 2½ to 10 tons) plus the recording truck and cable trucks or pickups. The vehicles may travel off-road along a single two-lane trail made by the trucks as the survey progresses. The vehicles may make several parallel trails in an attempt to distribute travel loads over a broader area. Travel along the line (trails) is usually a matter of one or two passes by the vehicle since the energy source is mobile and recording is done as the vehicles move down the line.

### Explosives

Historically, explosives have been the most widely used way to generate seismic shock waves. Subsurface and surface explosives are used.

### Subsurface Explosives

In the subsurface explosive method, 5 to 50 pounds of explosive charge are detonated at the bottom of a 25- to 200-foot drill hole. The hole is usually 2 to 6 inches in diameter and drilled with a truck-mounted drill. Access suitable to the travel of drill and recording trucks across the surface is desirable. Detonation of the charge in some areas causes no surface disturbance while in other areas a small crater up to 6 feet in diameter is created. Cuttings from the well are normally hauled to a suitable disposal site, scattered by hand near the "shot hole," or put back in the shot hole afterwards. Bentonite mud is often used to plug the shot hole. The same hole may be reloaded and shot several times to find the depth and charge returning the best signal.

Drilling and shooting are similar to vibroseisers and thumpers since the drill is transported by truck. However, the trucks used in drilling are usually heavier (15 to 20 tons). As with other truck transported operations, existing roads may be used or trails may be blazed by the drill vehicles and/or a bulldozer. A truck-mounted drill and shop operation generally takes longer to complete and requires more trips by vehicles along a line (drill service equipment) than do vibro and thumper operations.

Where access limitations, topography, or other restraints prevent use of truck-mounted drill rigs or recording trucks, light weight, portable drill equipment can be used. Various kinds of portable drills can be backpacked or delivered by helicopter to the area. These portable operations use a pattern of holes drilled to a depth of about 25 feet. The holes are loaded with explosives and detonated simultaneously.

### Surface Explosives

The surface explosives charge method involves placing explosives directly on ground, on snow, or on a variety of stakes and platforms. Paper cones, survey stakes, lathes, or 2x4s up to 8 feet in length have been used with varying success in different areas. Use of tall stakes or explosives placed on the surface of deep snow results in good seismic data in some areas, while creating little visible surface disturbance.

Surface explosive methods are very mobile. Generally, 4x4 vehicles are used for transportation, although the method is adaptable to airborne and pack teams.

A given area may be explored several times by the same or different companies over a long period of time.

## Exploratory Drilling

Drilling does not begin until a lease has been acquired by the operator. When preliminary investigations are favorable and warrant further exploration, exploratory drilling may be justified. Stratigraphic tests and wildcat tests are the two types of exploratory drill holes.

### Stratigraphic Tests

"Strat" tests involve drilling relatively shallow holes to supplement seismic data. These tests aid in revealing the nature of near-surface structural features. The holes are usually from 100 to several thousand feet deep, and are drilled primarily by rotary drill rigs. As the rock is drilled, the resulting rock chips are brought to the surface by a high-pressure airflow or circulating drilling mud. Samples of these chips are collected, bagged, and identified as to depth of origin. They are then studied by a geologist to determine composition, age, and possible formation.

Truck-mounted drilling equipment for strat tests is fairly mobile; therefore, roads and trails to test sites on level solid ground are temporary and involve minimal construction. In hilly or mountainous areas, more road building is necessary.

Generally access roads are bladed 12 to 14 feet wide and are not crowned nor ditched. Some roads may simply be surface scraped; i.e., vegetation is clipped off next to the soil surface. Other roads may require cuts in excess of 20 feet and fills exceeding 10 feet. Strat tests requiring a large amount of construction (i.e., several acres of cut and fill described previously) are unusual since construction costs may outweigh the information gained.

A space of about one-half acre or less is leveled and cleared of vegetation for the average drill site. If high pressure air is used to remove rock chips or rock cuttings, rock dust may be emitted into the air when samples are not being collected. If mud is used as a drilling fluid, mud pits may be dug; more commonly, portable mud tanks are used. Usually 1 to 3 days are required to drill the test holes, depending on depth to and hardness of the bedrock. In areas with shallow, high-pressure, water bearing zones, casing may be required to keep water out of the hole.

### Wildcat Well

Following compilation of available geophysical and geological information, a decision is made regarding drilling of a "wildcat" well if conditions are favorable. The position of this well is determined by the lessee and/or operator and a proposal to drill is made to the BLM by either a Notice of Staking (NOS) or an Application for Permit to Drill (APD). In all cases, an onsite inspection of the proposed drilling location is made by representatives of the BLM, the lessee/operator, and other interested parties. During this onsite inspection, the site location and access route most advantageous from an environmental, geologic, and engineering standpoint is selected. In addition, surface use and reclamation requirements are developed for inclusion into the APD.

The drilling program provided in the APD is reviewed by the BLM for technical adequacy and protection of subsurface resources. This review ensures the adequacy of all downhole operations associated with the drilling of the well. Approval of the APD incorporates all requirements for surface use and drilling, which were identified at the onsite and during the technical review.

After completing the necessary permitting procedures, construction of the access road and well site can begin.

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The initial construction will involve the development of an access route to the well site. Existing roads or overhaul trailing will be used whenever possible. In situations requiring road construction, a 12- to 14-foot travel width will be adequate for exploration purposes. Bulldozers, graders, and other types of heavy equipment are used to construct and maintain the temporary roads and the well site.

The drill "pad" (well site) is generally from 1 to 3 acres in size. It is cleared of all vegetation, and leveled for the drill rig, mud pumps, mud (or reserve) pit, generators, pipe rack, and tool house. Topsoil and native vegetation are usually removed and stockpiled for use in the reclamation process. The mud pit may be lined with plastic or bentonite to prevent fluid loss or prevent contamination of water resources. Other facilities, such as storage tanks for water and fuel, are located on the pad or are positioned nearby on a separate cleared area. If the well site is not large enough for the equipment required to rig-up (prepare the drilling rig for operation), a separate staging area may be constructed. Staging areas are usually no larger than 200 by 200 feet and may simply be a wide flat spot along the access road on which vehicles and equipment are parked.

The rigs are very large and may be moved in pieces. In some instances, rigs can be skidded short distances on level terrain, which will shorten the tearing-down and rigging-up time. Moving a dismantled rig involves use of heavy trucking equipment for transportation, and crews to erect the rig. Gross weight of vehicles may run in excess of 80,000 lbs.

The start of a well is called "spudding in." A short piece of tubing called conductor pipe is forced into the ground (sometimes with a piledriver), and cemented in place. This keeps surface sand and dirt from sloughing into the well hole. Next the regular drill bit and drill string (the column of drill pipe) take over. These pass vertically through a heavy steel turntable (the rotary table) on the derrick floor and the conductor pipe. The rotary table is geared to one or more engines, and rotates the drill string and bit. As the bit bores deeper into the earth, the drill string is lengthened by adding more pipe to the upper end.

Once the hole reaches a depth of several hundred feet, another string of pipe (the surface casing), is set inside the conductor pipe and cemented in place by pumping cement between the casing and hole wall. Surface casing acts as a safety device to protect fresh water zones (aquifers) from drilling fluid contamination. To prevent the well from "blowing out" in the event the drill bit hits a high pressure zone, "blowout preventors" (large metal rams) are installed around the surface casing just below the derrick floor. These rams will slam together, crushing the drill string and sealing the well in the event of a blowout.

After setting the surface casing, drilling resumes using a smaller diameter bit. Depending on well conditions, additional strings of casings (intermediate casing) may be run (installed) before the well reaches the objective depth (total depth or "T.D.").

During drilling, a mixture of water, clay, and chemical additives known as "mud" are constantly pumped down the drill pipe. It exits through holes in the bit and returns to the surface outside the drill pipe. As the mud circulates, it cleans and cools the bit and carries the rock chips (cuttings) to the surface. It also helps to seal off the sides of the hole (thus preventing cave-ins), and to control the pressure of any water, gas, or oil encountered by the drill bit. The cuttings are separated from the mud and sampled so that geologists can note and analyze (log) the various strata through which the bit is passing. The rest of the cuttings pass into the reserve pit as waste. Some holes are drilled at least partially with compressed air which serves the same purpose of cooling and cleaning the bit and evacuating the cuttings from the hole as drilling mud.

From 5,000 to 15,000 gallons of water a day may be needed for mixing drilling mud, cleaning equipment, cooling engines, etc. A surface pipeline may be laid to a stream or a water well, or the water may be trucked to the site from ponds or streams in the area.

During or at completion of drilling activity, the well is logged. Logging means measuring with geophysical instruments the physical characteristics of the rock formations and associated fluids through which the borehole passes. These instruments are lowered to the bottom of the well, and slowly raised to the surface while recording data. Other measuring procedures include the drill stem test, in which pressures are recorded and fluid samples taken from zones of interest. After studying the data from those logs and tests, the geologist and/or petroleum engineer decide if the well will produce petroleum.

If the well did not encounter oil and gas, it is plugged with cement and abandoned. The well pad and access road are recontoured and revegetated.

If the well will produce, casing is run to the producing zone and cemented in place. The drill rig is usually replaced by a smaller rig that is used for the final phase of completing the well.

## Development

### Field Development

If a wildcat well becomes a discovery well (a well that yields commercial quantities of oil, or gas), additional (development) wells will be drilled to confirm the discovery,

to establish the extent of the field, and to efficiently drain the reservoir. The procedures for drilling development wells are about the same as for wildcats, except there is usually less subsurface sampling, testing, and evaluation. If formation pressure can raise oil to the surface, the well will be completed as a flowing well. Several downhole acid or fracture treatments to enhance the formation permeability may be necessary to see if the well flows. A free-flowing well is simply closed off with an assembly of valves, pipes, and fittings (called a Christmas tree) to control the flow of oil and gas to other production facilities. A gas well may be flared for a short period to measure the amount of gas per day the well can produce, then shut-in or connected to a gas pipeline.

If the well is not free-flowing, it will be necessary to use artificial lift (pump) methods. These are explained, along with well production equipment and procedures, in the following section on production. After a pump is installed, the well may be tested for days or months to see if it is economically justifiable to produce the well and to drill additional development wells. During this phase, more detailed seismic work may be run to assist in precisely locating the petroleum reservoir and to improve upon previous seismic work.

As with wildcat wells, field development well locations will be surveyed. A well spacing pattern must be established by the state, with the concurrence of the BLM.

Oil well spacing for production from federal leases is usually a minimum of 40 acres. Most gas well spacing for production from federal leases uses units of 160, 320, and 640 acres per well. Spacing for both oil and gas wells is based on the characteristics of the producing formation. If a field is producing from more than one formation, the surface location of the wells may be much closer than one per 40 acres. Once well spacing has been approved, development of the lease proceeds.

During the development stage, the road system of the area is greatly expanded. Once it is known which wells produce and their potential productive life, a permanent road system can be designed and built. Because it often takes several years to develop a field and determine field boundaries, the permanent road system is usually built in segments. Since the roads in an expanding and developing field are built in segments, many temporary roads (built initially for wildcats or development) end up as long term (in excess of 15 years) main access or haul roads. The planning of temporary roads for wildcats and development wells is done with road conversion to long term in mind.

Since development wells have longer life-spans than wildcat wells, access roads for development wells, are better planned, designed, and constructed. Access roads are normally limited to one main route to serve the lease areas, with a maintained side road to each well. Upgrading of temporary roads may include ditching, draining, installing culverts, graveling, crowning, or capping the roadbed. The amount of surface area needed for roads would be similar to that for temporary roads mentioned earlier, and would also be dependent on topography and loads to be transported over it. Generally, main access roads are 20 to 24 feet wide and side roads are 14 to 18 feet wide. These dimensions are for the driving surface of the road and not the maximum surface disturbance associated with ditches, back cuts, or fills. The difference in disturbance is simply a matter of topography.

When an oil field is developed on the current minimum spacing pattern of 40 acres per well, the wells are 1,320 feet apart in both north-south and east-west directions. If a section (1 square mile) is developed with 16 wells, at least 4 miles of access roads are built. In mountainous terrain, the length of access roads may be increased since steep slopes, deep canyons, and unstable soil areas must often be circumvented in order to construct stable access to the wells.

Surface use in a gas field may be similar to an oil field (through usually less) even though the spacing of wells is usually 160 acres. Though a 160-acre spacing requires only four wells per section, the associated pipeline system often has similar initial surface requirements (acreage of surface disturbance).

In addition to roads, other surface uses for development drilling may include flowlines; storage tank batteries; facilities to separate oil, gas and water (separators and treaters); and injection wells for salt water disposal. Some of the facilities may be installed at each producing well site, and others at places situated to serve several wells. These facilities are discussed more in the following production section.

The rate of development well drilling depends on whether the field is operated on an individual lease basis or unitized; the probability of profitable production; the availability of drilling equipment; protective drilling requirements (drilling requirements to protect federal land from subsurface petroleum drainage by off-setting non-federal wells); and the degree to which limits of the field are known. The most important development rate factor may be the quantity of production. If the discovery well has a high rate of production and substantial reserves, development drilling usually proceeds at a fairly rapid pace. If there is some question whether reserves are sufficient to warrant additional wells, development drilling may occur at a much slower pace. An evaluation period to observe production performance may follow between the drilling of successive wells.

As mentioned earlier, drilling in an undeveloped part of a lease to prevent drainage of petroleum to an offset well on an adjoining lease (protective drilling) is frequently required in fields of intermingled federal and privately owned

land. The terms of federal leases require such drilling if the offset well is on non-federal lands, or on federal lands leased at a lower royalty rate.

Many fields go through several development phases. A field may be considered fully developed and produce for several years, then a well may be drilled to a deeper pay zone. Discovery of a new pay zone in an existing field is a "pool" discovery, as distinguished from a new field discovery. A pool discovery may lead to the drilling of additional wells—often from the same drilling pad as existing wells—with the boreholes separated only by feet or inches. Existing wells may also be drilled deeper.

**Transportation Development**

Usually 4- to 6-inch diameter pipelines transport the petroleum between the well, the treating and separating facilities, and central collection points. These lines can be on the surface, buried, or elevated.

Trucking is used to transport crude oil from small fields where installation of pipelines is not economical and the natural gas in the field is not economically marketable. Pipelines are also used to transport oil and gas if the field is of sufficient size. These pipelines are used to move the oil from gathering stations to refineries.

Natural gas pipelines transport gas from the wells (gathering or flow lines) to a trunk line then to the main transmission line from the area. Flow lines are usually 2 to 4 inches in diameter and may or may not be buried. Trunk lines are generally 6 to 8 inches in diameter and are buried, as are transmission lines which vary in diameter from 10 to 36 inches. The area required to construct a pipeline varies from about 15 inches wide (for a 2- to 4-inch surface line) to greater than 75 feet for the larger diameter transmission lines (24 to 36 inches). Surface disturbance is primarily dependent on size of the line and topography of the area on which the line is being constructed. Construction of a pipeline requires excavating and hauling equipment, a temporary and/or permanent road, possibly pumping stations, clearing the right-of-way of vegetation, and possibly blasting.

Compressor stations may be necessary to increase production pressure to the same level as pipeline pressure. The stations vary in size from approximately 1 acre to as much as 20 acres for a very large compressor system.

Construction techniques for natural gas lines are similar to those used for oil pipelines.

**Production**

Production in an oil field begins just after the discovery well is completed and is usually concurrent with development operations. Temporary facilities may be used at first, but as development proceeds and reservoir limits are determined, permanent facilities are installed. The extent of such facilities is dictated by the number of producing wells, expected production, volume of gas and water produced with the oil, the number of leases, and whether the field is to be developed on a unitized basis.

The primary means of removing oil from a well in the resource area is by pumping jacks (familiar horsehead devices). The pumps are powered by electric motors (pipelines required) or if there is sufficient casinghead gas (natural gas produced with the pumped oil), or another gas source is available, it may be used to fuel internal combustion engines.

Any production activities resulting in new or additional surface disturbance and/or not approved under the APD, require approval of the authorized officer of the BLM. Activities requiring prior approval include, but are not limited to: redrilling, deepening, performing casing repairs, plugging back, altering casing, performing nonroutine fracturing jobs, recompleting in a different interval, performing water shutoff, and converting to injection or disposal.

**Disposal of Produced Water**

Some wells drilled in an area may produce sufficient water, which must be disposed of during the operation of the well. Although most produced waters are brackish to highly saline, some are fresh enough for beneficial use. If water is to be discharged, it must meet certain water quality standards. Because water may not come from the treating and separating facilities completely free of oil, oil skimmer pits may be established between separating facilities and surface discharge.

When salt water is disposed of underground, it is usually introduced into a formation containing water of equal or poorer quality. It may be injected into the producing zone from which it came or into other producing zones. In some cases, it could reduce the field productivity and may be prohibited by state regulation or mutual agreement of operators. In some fields, dry holes or depleted producing wells are used for salt water disposal, but occasionally new wells are drilled for disposal purposes. Cement is squeezed between the casing and sides of the well to prevent the salt water from migrating up or down from the injection zone into other formations.

### Onsite Processing

Crude oil is usually transferred from the wells to tank storage facilities (a tank battery) before it is transported from the lease. If it contains gas and water, they are separated before the oil is stored in the tank battery. The treating and separating facilities are usually located at a storage tank battery on or near the well site.

After the oil, gas, and water are separated, the oil is piped to storage tanks located on or near the lease. There are normally at least two tanks; so one tank can be filling as the contents of the other are measured, sold, and transported. The number and size of tanks vary with the rate of production on the lease, and with the extent of automation in gauging the volume and sampling the quality of the tank contents.

## Abandonment

The life-span of fields varies because of the unique characteristics of any given field. Such things as reserves, reservoir characteristics, the nature of the petroleum, subsurface geology, and political, economic, and environmental constraints all affect a field life-span from discovery to abandonment. However an estimate of 15 to 25 years is used for the average life of a typical field. Abandonment of individual wells may start early in a field life and reach a maximum when the field is depleted.

Well plugging and abandonment requirements vary with the rock formations, subsurface water, well site, and the well. Generally, however, in a dry (never produced) well, the hole below the casing is filled with heavy drilling mud, a cement plug is installed at bottom of the casing, the casing is filled with heavy mud, and a cement cap is installed on top. A pipe monument giving the location, lease number, operator, and name of the well is required unless waived by the authorized officer. If waived, the casing may be cut off and capped below ground level. Protection of aquifers and known oil and gas producing formations may require placement of additional cement plugs.

In some cases, wells that formerly produced are plugged as soon as they are depleted. In other cases, depleted wells are not plugged immediately but are allowed to stand idle for possible later use in a secondary recovery program. Truck-mounted equipment is used to plug former producing wells. In addition to the measures required for a dry hole, plugging of a depleted producing well requires a cement plug in the perforated section in the producing zone. If the casing is salvaged, a cement plug is put across the casing stub. The cement pumpjack foundations are removed or buried below ground level. Surface flow and injection lines are removed, but buried pipelines are usually left in place and plugged at intervals as a safety measure.

After plugging, the drilling rig is removed and the surface, including the reserve mud pit, is restored to the requirements of the APD. This may involve the use of dozers and graders to recontour those disturbed areas associated with the drill pad plus the access road to the particular pad. The reserve pit (the part of the mud pit in which a reserve supply of drilling fluid and/or water is stored) must be evaporated or pumped dry, and filled with soil material stockpiled where the site was prepared. There will be little leakage if the pit was lined with plastic or bentonite. The area will be reshaped to allow revegetation to take place, restore the landform as near as possible to its original contour, and minimize erosion. After grading the subsoil and spreading the stockpiled topsoil, the site is seeded with a grass mixture that will establish a vegetative cover. A fence may be erected to protect the site until revegetation is complete, particularly in livestock concentration areas.

# STANDARD DESIGN AND OPERATING PRACTICES FOR FLUID MINERAL OPERATIONS

The following list of standard design and operating practices includes project design features, mitigation practices, and reclamation procedures that will be utilized as necessary for fluid operations within the SLRA These practices would be applied at the discretion of the authorized officer as conditions of approval or requirements for geophysical and/or drilling operations within the terms and conditions of the lease and the regulations.

BLM lease form 3100-11, *Offer to Lease and Lease for Oil and Gas* (Exhibit 1) contains lease terms and conditions, which cover items such as bonding, rental and/or royalty, inspections, safety, and protection of other resource values. Specifically, Section 6 of the lease terms establishes general requirements for conducting operations on the lease and is referred to as the "standard" lease term for the protection of surface resources. This section in conjunction with the regulations in 43 CFR 3100 and applicable Notice to Lessees/Onshore Orders provides significant latitude for modification of siting (i.e., relocation up to 200 meters), facility design, timing of operation (i.e.,no operations up to 60 days), and specifications for interim and final reclamation measures. The standard lease term specifically requires that prior to conducting any surface disturbing activities, the lessee/operator will contact and receive approval from the BLM and the lessee may be required to complete minor inventories or short-term special studies.

It is not possible to anticipate the entire spectrum of fluid activities that could be proposed; therefore, other practices not identified in the following could be applied in particular situations. In addition, new advances in technology and reclamation practices are continually being developed, which would result in providing the needed resource protection through means other than those identified in this section.

## Geophysical Operations

The operator is required to file with the authorized officer (A.O.) of the BLM, either in person or by mail, a "Notice of Intent to Conduct Oil and Gas Exploration Operations" and be appraised of practices and procedures (Exhibit 2) to be followed prior to and during operations conducted on BLM-administered lands. Any resources requiring site-specific mitigation not adequately contemplated in the standard practices and procedures, will be attached as special stipulations to the "Notice of Intent." The completion and signing of the "Notice of Intent" signifies agreement by the operator to comply with the terms, conditions and requirements of the notice. Evidence of satisfactory bonding shall accompany the notice or be obtained by the operator prior to conducting activities under the notice.

Upon completion of operations under the notice, including any required reclamation, the operator shall file a "Notice of Completion of Oil and Gas Exploration Operations" with the A.O. The A.O. will then complete a final inspection and notify the operator if the terms and conditions of the notice have been met or if additional action is required. Consent to release of bond or termination of liability will not be given until all the terms and conditions of the Notice have been met.

### Application for Permit to Drill

Onshore oil and gas operations are subject to federal regulations contained in Title 43 CFR Part 3160, "Onshore Oil and Gas Operations" and applicable Onshore Orders or Notice to Lessees. After lease issuance and prior to approval of any drilling activities within the area of the lease, the operator must submit an Application for Permit to Drill (APD) as required by Onshore Oil and Gas Order No. 1. The APD provides operational and geologic information as well as the applicant's proposal for use of the surface. Bonding coverage must be obtained by the applicant before approval, and the applicant must either have record title, operating rights, or be designated operator by the individuals having authority to make such designations.

The applicant's proposal for use of the surface is provided in the APD per submittal of the Surface Use and Operations Plan. This plan provides a detailed description of the existing roads, proposed access road location and design, location of existing wells, proposed production facilities, water supply, construction materials, waste disposal, ancillary facilities, well site layout, plans for surface reclamation, surface ownership, lessee's or operator's representative, and any other additional information that may be helpful in processing the APD. Where private surface is involved, the plan includes a copy of the written agreement between the lessee or operator and the surface owner. A letter from the lessee or operator setting forth reclamation requirements agreed to with the surface owner is acceptable. The preparer is required to certify that the information in the surface use plan is to the best of his knowledge true and correct. The surface use plan is one of the items used to evaluate the environmental impacts of the proposal.

A site-specific and field examination of the proposed drill site and access road is conducted by BLM and other interested parties. Other participants normally attending the inspection include the surface management agency (SMA) for federal surface, the appropriate state agency on state lands, the surface owner on private lands, the operator, drilling contractor, dirt contractor, and any other interested parties. From this effort, site-specific requirements are formulated for the protection of the affected resources. Although BLM has prime responsibility at this point, it must have full concurrence from any other surface managing agency. If differences exist, these are forwarded through various administrative levels and eventually to the Secretary.

The site-specific impacts of the proposed drilling operation are assessed through the preparation of an appropriate environmental document as required by NEPA. As part of the review process state and federal agencies possessing special expertise in the management of a particular resource are consulted in order to obtain their advise as to the impact of the proposal to a specific resource. Examples of agencies consulted include the U.S. Fish and Wildlife Service concerning threatened or endangered species and the State Historic Preservation Officer concerning cultural resources.

The lease contains standard stipulations as shown in Exhibit 1. The surface use plan, onsite inspection and consultation are used collectively to assess the site-specific impacts. BLM also includes site specific surface and subsurface conditions of approval in the approved permit. The following list of standard operating practices identifies requirements which may be attached to the APD.

### Surface Use Standards

All operations will be conducted so as not to cause pollution or change the character of streams, lakes, ponds,

EXHIBIT 1

Form 3100-11
(June 1988)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

Serial No.

# OFFER TO LEASE AND LEASE FOR OIL AND GAS

The undersigned *(reverse)* offers to lease all or any of the lands in Item 2 that are available for lease pursuant to the Mineral Leasing Act of 1920, as amended and supplemented (30 U.S.C. 181 et seq.), the Mineral Leasing Act for Acquired Lands of 1947, as amended (30 U.S.C. 351-359), the Attorney General's Opinion of April 2, 1941 (40 Op. Atty. Gen. 41), or the

**READ INSTRUCTIONS BEFORE COMPLETING**

1. Name

   Street

   *City, State, Zip Code*

2. This application/offer/lease is for: *(Check only One)* ☐ PUBLIC DOMAIN LANDS ☐ ACQUIRED LANDS (percent U.S. interest _____)

   Surface managing agency if other than BLM: _____ Unit/Project _____

   Legal description of land requested: *Parcel No.:_____ *Sale Date (m/d/y):____ / ____ / ____

   ***SEE ITEM 2 IN INSTRUCTIONS BELOW PRIOR TO COMPLETING PARCEL NUMBER AND SALE DATE.**

| T. | R. | Meridian | State | County |
|---|---|---|---|---|

Total acres applied for _____

Amount remitted: Filing fee $ _____ Rental fee $ _____ Total $ _____

**DO NOT WRITE BELOW THIS LINE**

3. Land included in lease:

| T. | R. | Meridian | State | County |
|---|---|---|---|---|

Total acres in lease _____

Rental retained $ _____

This lease is issued granting the exclusive right to drill for, mine, extract, remove and dispose of all the oil and gas *(except helium)* in the lands described in Item 3 together with the right to build and maintain necessary improvements thereupon for the term indicated below, subject to renewal or extension in accordance with the appropriate leasing authority. Rights granted are subject to applicable laws, the terms, conditions, and attached stipulations of this lease, the Secretary of the Interior's regulations and formal orders in effect as of lease issuance, and to regulations and formal orders hereafter promulgated when not inconsistent with lease rights granted or specific provisions of this lease.

**NOTE: This lease is issued to the high bidder pursuant to his/her duly executed bid or nomination form submitted under 43 CFR 3120 and is subject to the provisions of that bid or nomination and those specified on this form.**

Type and primary term of lease:

☐ Noncompetitive lease (ten years)

☐ Competitive lease (five years)

☐ Other _____

THE UNITED STATES OF AMERICA

by _____
(Signing Officer)

_____ _____
(Title) (Date)

EFFECTIVE DATE OF LEASE _____

4. (a) Undersigned certifies that (1) offeror is a citizen of the United States; an association of such citizens; a municipality; or a corporation organized under the laws of the United States or of any State or Territory thereof; (2) all parties holding an interest in the offer are in compliance with 43 CFR 3100 and the leasing authorities; (3) offeror's chargeable interests, direct and indirect in either public domain or acquired lands do not exceed 246,080 acres in Federal oil and gas leases in the same State, of which not more than 200,000 acres are held under option, or 300,000 acres in leases and 200,000 acres in options in either leasing District in Alaska; (4) offeror is not considered a minor under the laws of the State in which the lands covered by this offer are located; (5) offeror is in compliance with qualifications concerning Federal coal lease holdings provided in sec. 2(a)(2)(A) of the Mineral Leasing Act; (6) offeror is in compliance with reclamation requirements for all Federal oil and gas lease holdings as required by sec. 17(g) of the Mineral Leasing Act; and (7) offeror is not in violation of sec. 41 of the Act.

(b) Undersigned agrees that signature to this offer constitutes acceptance of this lease, including all terms, conditions, and stipulations of which offeror has been given notice, and any amendment or separate lease that may include any land described in this offer open to leasing at the time this offer was filed but omitted for any reason from this lease. The offeror further agrees that this offer cannot be withdrawn, either in whole or in part, unless the withdrawal is received by the proper BLM State Office before this lease, an amendment to this lease, or a separate lease, whichever covers the land described in the withdrawal, has been signed on behalf of the United States.

**This offer will be rejected and will afford offeror no priority if it is not properly completed and executed in accordance with the regulations, or if it is not accompanied by the required payments. 18 U.S.C. Sec. 1001 makes it a crime for any person knowingly and willfully to make to any Department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.**

Duly executed this _____ day of _____, 19 _____. _____

(Signature of Lessee or Attorney-in-fact)

## LEASE TERMS

Sec. 1. Rentals—Rentals shall be paid to proper office of lessor in advance of each lease year. Annual rental rates per acre or fraction thereof are:

(a) Noncompetitive lease, $1.50 for the first 5 years; thereafter $2.00;
(b) Competitive lease, $1.50; for primary term; thereafter $2.00;
(c) Other, see attachment, or

as specified in regulations at the time this lease is issued.

If this lease or a portion thereof is committed to an approved cooperative or unit plan which includes a well capable of producing leased resources, and the plan contains a provision for allocation of production, royalties shall be paid on the production allocated to this lease. However, annual rentals shall continue to be due at the rate specified in (a), (b), or (c) for those lands not within a participating area.

Failure to pay annual rental, if due, on or before the anniversary date of this lease (or next official working day if office is closed) shall automatically terminate this lease by operation of law. Rentals may be waived, reduced, or suspended by the Secretary upon a sufficient showing by lessee.

Sec. 2. Royalties—Royalties shall be paid to proper office of lessor. Royalties shall be computed in accordance with regulations on production removed or sold. Royalty rates are:

(a) Noncompetitive lease, 12½%;
(b) Competitive lease, 12½%;
(c) Other, see attachment; or

as specified in regulations at the time this lease is issued.

Lessor reserves the right to specify whether royalty is to be paid in value or in kind, and the right to establish reasonable minimum values on products after giving lessee notice and an opportunity to be heard. When paid in value, royalties shall be due and payable on the last day of the month following the month in which production occurred. When paid in kind, production shall be delivered, unless otherwise agreed to by lessor, in merchantable condition on the premises where produced without cost to lessor. Lessee shall not be required to hold such production in storage beyond the last day of the month following the month in which production occurred, nor shall lessee be held liable for loss or destruction of royalty oil or other products in storage from causes beyond the reasonable control of lessee.

Minimum royalty in lieu of rental of not less than the rental which otherwise would be required for that lease year shall be payable at the end of each lease year beginning on or after a discovery in paying quantities. This minimum royalty may be waived, suspended, or reduced, and the above royalty rates may be reduced, for all or portions of this lease if the Secretary determines that such action is necessary to encourage the greatest ultimate recovery of the leased resources, or is otherwise justified.

An interest charge shall be assessed on late royalty payments or underpayments in accordance with the Federal Oil and Gas Royalty Management Act of 1982 (FOGRMA) (30 U.S.C. 1701). Lessee shall be liable for royalty payments on oil and gas lost or wasted from a lease site when such loss or waste is due to negligence on the part of the operator, or due to the failure to comply with any rule, regulation, order, or citation issued under FOGRMA or the leasing authority.

Sec. 3. Bonds—A bond shall be filed and maintained for lease operations as required under regulations.

Sec. 4. Diligence, rate of development, unitization, and drainage—Lessee shall exercise reasonable diligence in developing and producing, and shall prevent unnecessary damage to, loss of, or waste of leased resources. Lessor reserves right to specify rates of development and production in the public interest and to require lessee to subscribe to a cooperative or unit plan, within 30 days of notice, if deemed necessary for proper development and operation of area, field, or pool embracing these leased lands. Lessee shall drill and produce wells necessary to protect leased lands from drainage or pay compensatory royalty for drainage in amount determined by lessor.

Sec. 5. Documents, evidence, and inspection—Lessee shall file with proper office of lessor, not later than 30 days after effective date thereof, any contract or evidence of other arrangement for sale or disposal of production. At such times and in such form as lessor may prescribe, lessee shall furnish detailed statements showing amounts and quality of all products removed and sold, proceeds therefrom, and amount used for production purposes or unavoidably lost. Lessee may be required to provide plats and schematic diagrams showing development work and improvements, and reports with respect to parties in interest, expenditures, and depreciation costs. In the form prescribed by lessor, lessee shall keep a daily drilling record, a log, information on well surveys and tests, and a record of subsurface investigations and furnish copies to lessor when required. Lessee shall keep open at all reasonable times for inspection by any authorized officer of lessor, the leased premises and all wells, improvements, machinery, and fixtures thereon, and all books, accounts, maps, and records relative to operations, surveys, or investigations on or in the leased lands. Lessee shall maintain copies of all contracts, sales agreements, accounting records, and documentation such as billings, invoices, or similar documentation that supports costs claimed as manufacturing, preparation, and/or transportation costs. All such records shall be maintained in lessee's accounting offices for future audit by lessor. Lessee shall maintain required records for 6 years after they are generated or, if an audit or investigation is underway, until released of the obligation to maintain such records by lessor.

During existence of this lease, information obtained under this section shall be closed to inspection by the public in accordance with the Freedom of Information Act (5 U.S.C. 552).

Sec. 6. Conduct of operations—Lessee shall conduct operations in a manner that minimizes adverse impacts to the land, air, and water, to cultural, biological, visual, and other resources, and to other land uses or users. Lessee shall take reasonable measures deemed necessary by lessor to accomplish the intent of this section. To the extent consistent with lease rights granted, such measures may include, but are not limited to, modification to siting or design of facilities, timing of operations, and specification of interim and final reclamation measures. Lessor reserves the right to continue existing uses and to authorize future uses upon or in the leased lands, including the approval of easements or rights-of-way. Such uses shall be conditioned so as to prevent unnecessary or unreasonable interference with rights of lessee.

Prior to disturbing the surface of the leased lands, lessee shall contact lessor to be apprised of procedures to be followed and modifications or reclamation measures that may be necessary. Areas to be disturbed may require inventories or special studies to determine the extent of impacts to other resources. Lessee may be required to complete minor inventories or short term special studies under guidelines provided by lessor. If in the conduct of operations, threatened or endangered species, objects of historic or scientific interest, or substantial unanticipated environmental effects are observed, lessee shall immediately contact lessor. Lessee shall cease any operations that would result in the destruction of such species or objects.

Sec. 7. Mining operations—To the extent that impacts from mining operations would be substantially different or greater than those associated with normal drilling operations, lessor reserves the right to deny approval of such operations.

Sec. 8. Extraction of helium—Lessor reserves the option of extracting or having extracted helium from gas production in a manner specified and by means provided by lessor at no expense or loss to lessee or owner of the gas. Lessee shall include in any contract of sale of gas the provisions of this section.

Sec. 9. Damages to property—Lessee shall pay lessor for damage to lessor's improvements, and shall save and hold lessor harmless from all claims for damage or harm to persons or property as a result of lease operations.

Sec. 10. Protection of diverse interests and equal opportunity—Lessee shall: pay when due all taxes legally assessed and levied under laws of the State or the United States; accord all employees complete freedom of purchase; pay all wages at least twice each month in lawful money of the United States; maintain a safe working environment in accordance with standard industry practices; and take measures necessary to protect the health and safety of the public.

Lessor reserves the right to ensure that production is sold at reasonable prices and to prevent monopoly. If lessee operates a pipeline, or owns controlling interest in a pipeline or a company operating a pipeline, which may be operated accessible to oil derived from these leased lands, lessee shall comply with section 28 of the Mineral Leasing Act of 1920.

Lessee shall comply with Executive Order No. 11246 of September 24, 1965, as amended, and regulations and relevant orders of the Secretary of Labor issued pursuant thereto. Neither lessee nor lessee's subcontractors shall maintain segregated facilities.

Sec. 11. Transfer of lease interests and relinquishment of lease—As required by regulations, lessee shall file with lessor any assignment or other transfer of an interest in this lease. Lessee may relinquish this lease or any legal subdivision by filing in the proper office a written relinquishment, which shall be effective as of the date of filing, subject to the continued obligation of the lessee and surety to pay all accrued rentals and royalties.

Sec. 12. Delivery of premises—At such time as all or portions of this lease are returned to lessor, lessee shall place affected wells in condition for suspension or abandonment, reclaim the land as specified by lessor and, within a reasonable period of time, remove equipment and improvements not deemed necessary by lessor for preservation of producible wells.

Sec. 13. Proceedings in case of default—If lessee fails to comply with any provisions of this lease, and the noncompliance continues for 30 days after written notice thereof, this lease shall be subject to cancellation unless or until the leasehold contains a well capable of production of oil or gas in paying quantities, or the lease is committed to an approved cooperative or unit plan or communitization agreement which contains a well capable of production of unitized substances in paying quantities. This provision shall not be construed to prevent the exercise by lessor of any other legal and equitable remedy, including waiver of the default. Any such remedy or waiver shall not prevent later cancellation for the same default occurring at any other time. Lessee shall be subject to applicable provisions and penalties of FOGRMA (30 U.S.C. 1701).

Sec. 14. Heirs and successors-in-interest—Each obligation of this lease shall extend to and be binding upon, and every benefit hereof shall inure to the heirs, executors, administrators, successors, beneficiaries, or assignees of the respective parties hereto.



☆U.S. Government Printing Office: 1988–573-017/96009

EXHIBIT 2

Form 3040–1
(October 1983)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
OMB NO. 1004–0128
Expires: November 30, 1983

# NOTICE OF INTENT TO CONDUCT OIL AND GAS EXPLORATION OPERATIONS

| Name | Address *(include zip code)* |
|---|---|
| | |

hereby files this "Notice of Intent to Conduct Oil and Gas Exploration Operations" across and upon *(give description of lands by township(s) and range)*

The type of operation to be pursued is ☐ magnetometer ☐ seismograph ☐ other *(specify)*

Approximate date of commencement of operations Upon completion of work, the Bureau of Land Management District Manager shall be furnished a "Notice of Completion of Oil and Gas Exploration Operations."

The undersigned agrees that oil and gas exploration operations will be conducted pursuant to the following terms and conditions:

1. Exploration operations shall be conducted in compliance with all Federal, State and County laws, ordinances or regulations which are applicable to the area of operations including, but not limited to, those pertaining to fire, sanitation, conservation, water pollution, fish and game. All operations hereunder shall be conducted in a prudent manner.
2. Due care will be exercised in protecting lands in this notice. All necessary precautions shall be taken to avoid any damage other than normal wear and tear, to gates, bridges, roads, culverts, cattle guards, fences, dams, dykes, vegetative cover and improvements, and stock watering and other facilities.
3. Appropriate procedures shall be taken to protect any shafts, pits or tunnels, and shot holes shall be capped when not in use to protect the lives, safety, or property of other persons or of wildlife and livestock.
4. All vehicles shall be operated at a reasonable rate of speed, and due care must be taken to safeguard all livestock and wildlife in the vicinity of his operations. Bulldozers shall not be used without advance notification to the District Manager. Existing roads and trails shall be used wherever possible; if new roads and trails are made, care should be taken to follow natural contours of the lands where feasible and restoration and/or reseeding, as requested by District Manager shall be made.
5. Upon expiration, revocation or abandonment of operations conducted pursuant to this "Notice," all equipment shall be removed from the land and the land shall be restored as nearly as practicable to its original condition by such measures as the District Manager may specify. All geophysical holes must be safely plugged. Upon leaving the land, the District Manager shall be informed.
6. Upon request, the location and depth of water sands encountered shall be disclosed to the District Manager.
7. The party conducting such operations shall contact the District Manager prior to actual entry upon the land in order to be apprised of the practices which should be followed or avoided in the conduct of his operations in order to minimize damages to property of the United States.

| (Signature) | (Signature of Geophysical Operator) |
|---|---|
| (Address including zip code) | (Address including zip code) |

DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

Case Serial No. _____

PRACTICES TO BE FOLLOWED DURING GEOPHYSICAL EXPLORATION
OPERATIONS ON PUBLIC LANDS ADMINISTERED BY THE
CANON CITY DISTRICT OF THE BUREAU OF LAND MANAGEMENT

Name, Address, and Telephone Number of Company Filing the Notice of Intent _____ Date N.O.I. Filed _____

Seismic Company Party Chief, Name and Telephone Number _____

Subcontracting Company _____ Bond Type and Number _____

1. No blading or other dirt work will be allowed without written permission from the Area Manager.
2. All disturbed areas will be reseeded as directed by the Area Manager. Adequate vegetative cover will be established as determined through soil testing, vegetative density guides, etc.
3. Rehabilitation of disturbed areas is to be done concurrent with the geophysical operations insofar as possible. Seeding shall be done during the months of September or October. Although chances of failure are much greater with spring seeding, it may be done during April or May if approved by the Area Manager..
4. No trees will be removed or damaged without specific approval from the Area Manager. All merchantable timber shall be purchased by the operator at the total appraised price as determined by the BLM.
5. Blasting or vibrating within one-forth ($\frac{1}{4}$) mile of Federally owned or controlled springs and flowing water wells must be approved in writing by the Area Manager.
6. No blasting or dozing will be permitted within one-quarter ($\frac{1}{4}$) mile of historic trails, natural areas, identified archeological sites, and recreation areas. The operator shall, unless otherwise relieved by the District Manager:
   a. Engage the services of a qualified professional archeologist to perform and submit a report of an intensive cultural resources inventory on areas subject to disturbance by earth moving equipment.
   b. Avoid or mitigate impacts to cultural resources located by the survey.
   c. Undertake additional measures requested by the Area Manager to protect cultural resources that may be affected as a result of the operation.
7. The operator shall avoid any operations when the ground is muddy and/or wet. The Area Manager may prohibit exploration, drilling, or other activities during wet or heavy snow periods.
8. Water for drilling purposes will not be obtained from Federally owned or controlled water sources such as reservoirs and springs unless specific permission is obtained from the Area Manager.
9. Report any available information concerning water sands or artesian flows to the Resource Area Office.
10. Sealing, plugging, and capping of drill holes will conform to the requirements of the Colorado Mined Land Reclamation Act, as amended; Section 34-32-113(5.5). Drill hole cuttings will be either (1) returned to the drill hole (2) hauled to an appropriate disposal site, or (3) scattered evenly to a depth of 4 inches or less over the disturbed area.
11. Powder magazines will be located out of sight of and at least $\frac{1}{4}$ mile from traveled roads. Loaded shot holes will not be left unattended.
12. All trash, flagging, lath, etc., will be removed and hauled to an authorized disposal site.
13. The operator must notify the Area Manager 48 hours prior to the date rehabilitation operations will commence and again when reclamation operations have been completed.
14. Whenever possible, a portable mud pit shall be used when drilling with fluids.
15. A copy of these practices to be followed will be kept by each seismic crew.
16. The operator shall extinguish without expense to the Government all fires on or in the vicinity of the project set or caused by his employees whether set directly or indirectly as a result of operations.

I have been appraised of the practices which should be followed or avoided in the conduct of our geophysical operations. These practices will be explained to all of our subcontractors and they also will be expected to meet all the requirements.

Signature of Party Chief _____ Date _____



Additional Surface Protection Requirements

waterholes, seeps, or marshes. This relates directly to damages caused to fish and wildlife resources. Surface disturbance that causes active soil movement should be corrected.

A. Roads

1. Construction: Existing roads will be used whenever feasible for access. Existing roads vary from graded to drained to primitive roads with no blading or drainage structures installed. Travel on designated unbladed routes is preferred in areas of smooth rolling grassland and low shrubs if existing roads do not provide adequate access.

If construction of a new road is necessary, the initial access to an exploratory well site may be needed as a permanent road at some later date. Alignment, therefore, should be such that a permanent road can be constructed, and where possible, on routes identified in BLM transportation plans. Most of these roads will usually have little residual value for future access and will eventually be abandoned. Plans for this class of road will be developed toward their eventual closure and total rehabilitation.

Construction on steep hillsides and near watercourses will be avoided where alternate routes provide adequate access. Ridgetops offer the best winter access. Unnecessary disturbance of drainages and high erosion hazard areas should be avoided.

Drainages will not be plugged by roadfills. Drainage crossings will be constructed so as not to cause siltation or accumulation of debris. (See Figures 1, 2, and 3.) All drainage structures must meet BLM standards for temporary and permanent roads.

Long, slight to moderate road grades should contain "thank-u-mams", a common term for drainage dips. They may be installed after temporary roadbeds have been constructe d or during construction of permanent roads (See Figure 4).

2. Temporary Roads: Temporary roads would be planned for only the minimum width needed for exploration. They should be kept approximately 16 feet wide to prevent unnecessary disturbance (see Figure 5). They should follow natural contours to minimize cut and fill. Alignment shall have a grade no greater than 8 percent.

Cuts and fills on temporary roads will be designed to minimize surface disturbance. When constructing a road that involves cuts and fills, consider the character of cut material and depth of cut. Also, consider where the fill material will be deposited. It will not be cast over hilltops or into drainages. Cut slopes should normally be no steeper than 3:1 and fill slopes no steeper than 2:1. When construction is necessary, surface soil materials will be windrowed and stockpiled for later rehabilitation of the roadway. Stockpiles should be located on the uphill side of the road. If surface soil material is expected to be stockpiled for more than 1 year, the stockpile would be seeded or otherwise protected from wind and water erosion. The stockpile shall be marked or segregated to avoid loss or mixing with other subsurface materials.

Low water crossings are preferred in temporary roads (see Figure 1).

Surface-disturbing activities will avoid unnecessary damage to vegetation.

3. Permanent Roads: Access roads shall be limited to one main route to serve the lease area, with one maintained road to each well.

Permanent road designs must meet the specifications of BLM (see Figure 6.) Upgrading of temporary roads may include, but not be limited to, ditching, draining, installation of culverts, graveling, crowning, or capping of the roadbed (see Figures 2, 3, and 7).

Roads shall take advantage of existing or foreseeable routes. They should use natural contours as much as possible and avoid extensive cuts and fills.

Clearing of trees and shrubs will be kept to a minimum and provisions made in the plan for disposal of the material.

Permanent roads shall be constructed and maintained in good condition. Adequate water drainage will be provided to minimize erosion. Erosion of drainage ditches will be prevented by diverting water at frequent intervals (see E.12).

Surface soil material shall be stockpiled during upgrading or construction and redistributed on cut and fill slopes to aid revegetation.

Construction of roads to grades steeper than 8 percent shall not be allowed.

4. Maintenance: When a road crossing causes siltation or accumulation of debris in a drainage, the crossing shall be reworked (see Figure 1).

The operator shall regularly maintain all roads used for access to the lease operation. A maintenance plan may be required. A regular maintenance program may include, but not be limited to, upgrading of existing roads, blading, ditching, culvert, drainage installation, and graveling or capping of the roadbed.

5. Abandonment and Rehabilitation: When a road is to be abandoned, rehabilitation may consist of scarifying, waterbarring, and barricading. Cut and fill slopes shall be reduced to as gentle a grade as the topography permits. Stockpiled soil, debris, and fill materials shall be replaced on the roadbed and cut slopes so as to conform to the topography. All disturbed areas will be revegetated where

practical (see Figures 8 and 9). It is desirable to use native perennial species.

Waterbars shall be constructed and rehabilitation practices will be the same as those explained above.

B. Pipelines and Flowlines

1. Construction: Steep hillsides and water courses shall be avoided in the location of pipelines and flowlines. Flowline routes should take advantage of road locations to minimize surface disturbance.

Cuts and fills on pipelines shall be made only where necessary. Cut and fill slopes should normally be no steeper than 3:1 and graded to conform to the adjacent terrain.

Pipeline routes will be graded to conform to the adjacent terrain, waterbarred, and reseeded.

When clearing is necessary, the width disturbed will be kept to a minimum. Bladed materials shall be placed back into the cleared route upon completion of construction.

Pipeline construction shall not block, dam, nor change the natural course of any drainage. Suspended pipelines will provide adequate clearance for runoff.

Surface soil material shall be stockpiled to the side of the routes where cuts and fills or other surface disturbance occur during pipeline construction. Surface soil material shall be segregated and will not be mixed nor covered with subsurface material.

2. Maintenance: Pipeline routes shall not be used for roads unless properly constructed and authorized for such purposes.

Pipeline trenches shall be compacted during backfilling. These trenches will be maintained in order to correct settlement and prevent erosion.

Waterbars and other erosion control devices will be repaired as necessary.

Pumping stations shall be kept in a neat and well-maintained condition.

3. Abandonment and Rehabilitation: Reclamation and abandonment of pipelines and flowlines may involve: replacing fill in the original cuts, reducing and grading cut and fill slopes to conform to the adjacent terrain, replacement of surface soil material, waterbarring, and revegetating in accordance with rehabilitation practices contained under A.5, Abandonment and Rehabilitation practices will be the same as those explained above.

D. Selecting Locations for Well Sites, etc.: In planning for well sites, tank batteries, sump, reserve and mud pits, and pumping stations, the operator shall select locations that involve the least disruption to scenic values and other surface resources. The operator shall employ construction techniques and design practices, including selection of material, camouflage techniques, and rehabilitation practices that will preserve scenic aesthetic qualities. The following guidelines can be used by operators to assist in minimizing surface disturbance and as an aid in the maintenance of the best possible conditions for rehabilitation.

1. Construction: Steep slopes shall be avoided, the site shall be located on the most nearly level location obtainable that will accommodate the intended use.

View the site location as to how it will affect the road location. What may be gained on a good location may be lost from an adverse access route.

Adjust the site layout to conform to the best topographic situation. Deep vertical cuts and steep long fill slopes should be avoided. All cut and fill slopes should be constructed to the least percent slope practical.

Avoid excessive disturbance of drainage bottoms and locate reserve pits away from any watercourse. Reserve pits may have to be lined to prevent contamination of groundwater or soil (see Figure 11 for construction in areas of steep slopes).

Surface water shall not be allowed to accumulate on such sites in order to prevent excessive erosion. Runoff water can be controlled by installing waterbars, terraces, or diversion ditches on the uphill side of facilities (see Figures 12, 13, and 14.)

2. Abandonment and Rehabilitation: - Rehabilitation shall be planned on the sites of both producing and abandoned wells. The entire site or portion thereof, not required for the continued operation of the well, should be restored as nearly as practical to its original condition. Final grading of backfilled and cut slopes will be done to prevent erosion and encourage establishment of vegetation (see Figures 12, 13, and 14.)

Cut and fill slopes shall be reduced and graded to conform the site to the adjacent terrain. The disturbed sites will be prepared to provide a seed bed for re-establishment of desirable vegetation and reshaped to blend with the natural contour. Such practices may include contouring, terracing, gouging, scarifying, mulching, fertilizing, seeding, and planting.

All excavations, pits, or drill holes will be closed by backfilling when they are dry and made to conform to the surrounding terrain. Waterbars and terracing may be necessary to prevent erosion of fill material.

Rehabilitation practices will be the same as those explained in Abandonment and Rehabilitation, A.5.

E. Other Guidelines: Surface buildings, supporting facilities, and other structures, which are not required for

present or future operations, shall be removed upon termination of use.

All improvements, including fences, gates, cattleguards, roads, trails, pipelines, bridges, water developments, and control structures will be maintained in a serviceable and safe condition (see Figures 15 and 16 ).

1. Fires: Proper precautions shall be taken at all times to prevent or suppress fires. Range or forest fires will be reported to the BLM district or resource area office. All other fires or explosions that cause damage to property, equipment, loss of oil or gas, or result in injuries to personnel, will be reported to the Authorized Officer.

2. Survey Monuments: All survey monuments, witness corners, reference monuments, and bearing trees shall be protected against destruction, obliteration, or damage. Any markers so affected must be re-established at the lessee's expense in accordance with accepted BLM survey practices as set forth in the "Manual of Surveying Instructions for the Survey of the Public Lands of the United States."

3. Trash: A totally enclosed cage shall be required for all trash.

4. Cultural Resources: Federal lessees are required to provide a cultural resource inventory for any area where surface disturbance is planned. These inventories are required prior to the approval of any surface disturbing activity.

The objective of an inventory is to identify cultural resource sites of potential value that could be destroyed by dirt moving equipment. Whenever possible, avoidance of identified cultural resource sites by relocating proposed well sites, roads, etc., is the procedure recommended to mitigate potential impacts.

Historical, paleontological, and archeological resources discovered during operations are to be protected from disturbance by the lessee, his employees, contractors, subcontractors, and their respective employees. Detailed technical guidance for protection of cultural and paleontological resources are available in all BLM offices. Upon discovery of any evidence of items of historical, paleontological, or archeological value, operations should immediately cease and the BLM district manager be notified.

5. Timber: If it is necessary to remove timber from Federal lands administered by BLM, all merchantable timber must be purchased by the operator prior to cutting, at the appraised price determined by BLM.

6. Permit to Burn: Burning of solid or liquid wastes usually requires a burning permit. The permit must be obtained from the state air quality agency.

7. Release of Water: Any release of production water on or across the land will need prior approval by the BLM.

8. Other Hazards: Mud, separation pits, and other containments that are used during the exploration or operation of the lease for the storage of oil and other hazardous materials shall be adequately fenced, posted, or covered. Additional protective measures may be needed to minimize hazards and prevent access to humans, livestock, waterfowl, and other wildlife. The pits should be allowed to dry before backfilling and rehabilitation.

9. Spills: All production and storage facilities must have adequate protection from spills. The Spill Prevention Control and Countermeasure Plan required by the Environmental Protection Agency must be available for inspection at all the appropriate field offices. All spills must be reported to the Authorized Officer.

10. Stockpile Surface Soil: Surface soil material, if available, will be stripped from all areas where surface disturbance is necessary and stockpiled in a manner and location that will allow easy replacement. These stockpiles shall be protected from loss.

The depth of surface soil material to be removed and stockpiled will be specified by BLM. After reshaping the site, soil material should be distributed to a uniform depth that will allow the establishment of desirable vegetation. The disturbed areas shall be scarified prior to replacement of surface soil material.

11. Revegetation: Disturbed areas will be revegetated after the site has been satisfactorily prepared. Site preparation may include contour furrowing, terracing, reduction of steep cut and fill slopes, waterbarring, etc. The operator will be advised as to species, methods of revegetation, and seasons to plant. Seeding shall be done by drilling on the contour whenever practical. Seeding and/or planting will be repeated until satisfactory revegetation is accomplished, as determined by BLM. Mulching, fertilizing, fencing, or other practices may be required (see Figures 8, 12, 13, and 14).

12. Waterbars: The operator will be required to construct waterbars on abandoned roads and pipeline routes. General guidelines for installation of waterbars are: less than 2 percent grade—200-foot spacing, 4 to 5 percent grade—75-foot spacing, greater than 5 percent grade—50-foot spacing. Unstable soils may require a closer spacing whereas the spacing may be greater on stable soils and rock outcroppings. The waterbars shall be constructed to drain freely to the natural ground level and to prevent siltation and clogging (see Figure 9).

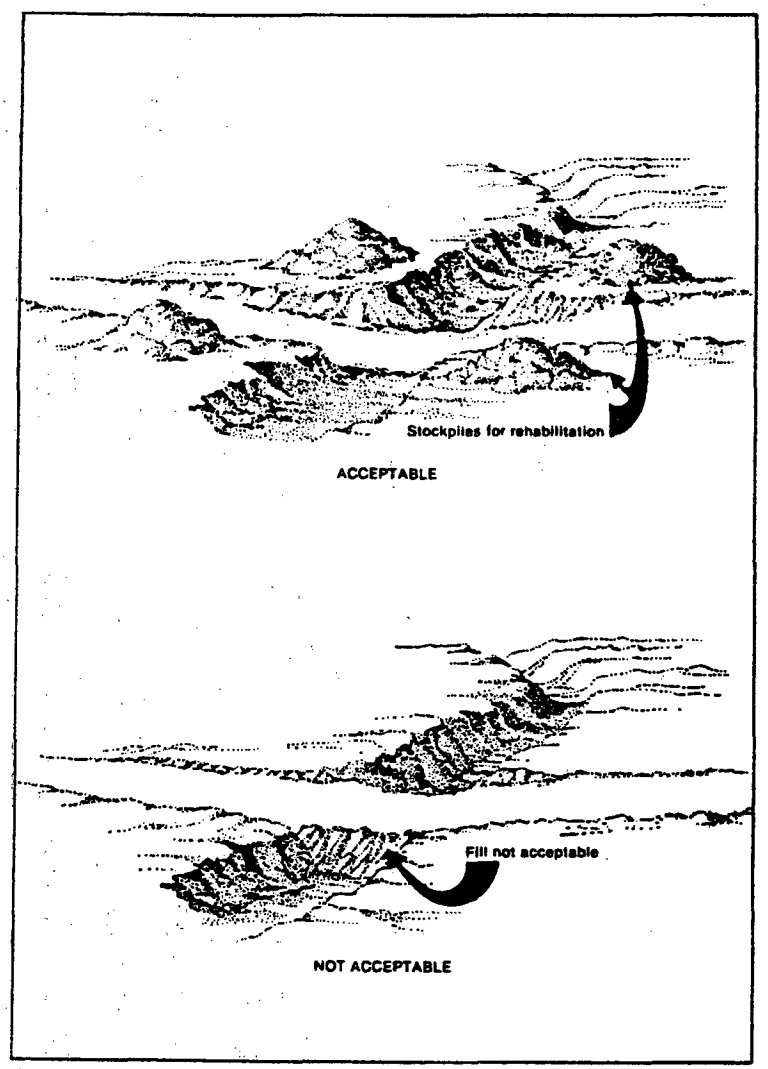
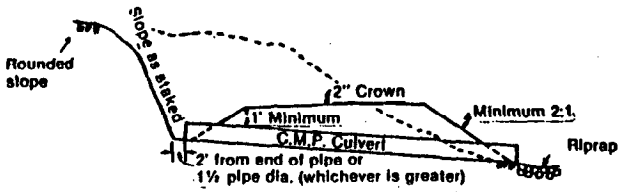
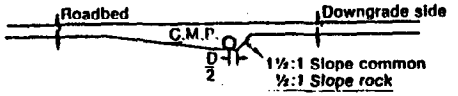


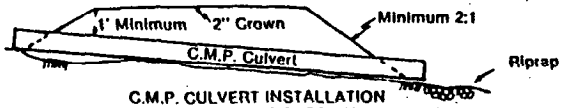

**Figure 1. Typical Dry Creek Drainage Crossing**




C.M.P. CULVERT INSTALLATION




DITCH CONSTRUCTION AT SIDE HILL
C.M.P. CULVERT INSTALLATION

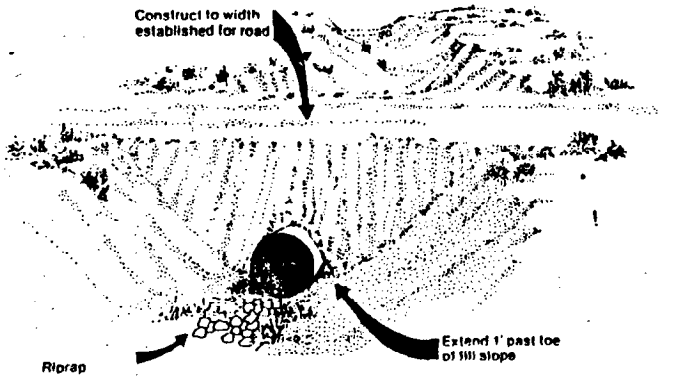



C.M.P. CULVERT INSTALLATION
EMBANKMENT SECTION

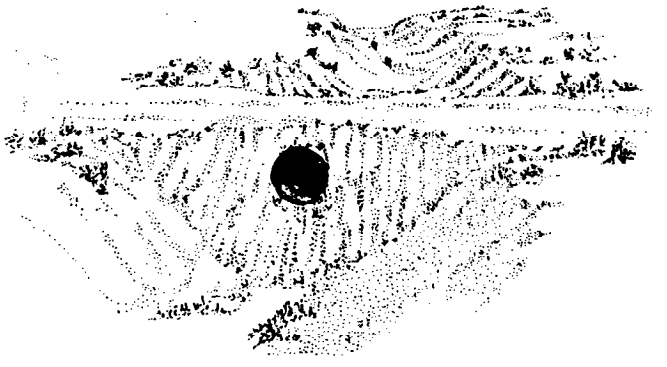
General Notes:

1. In bedding of C.M.P. Culverts, if the foundation is rock, excavate to depth of 8 in. below culvert grade and replace with earth cushion.
2. Minimum cover over culvert is one foot (1').
3. Minimum culvert diameter 18".
4. Minimum culvert spacing:
   (a) 1- 2% grade — 1000 feet minimum
   (b) 2- 4% grade — 800 feet minimum
   (c) 4- 6% grade — 600 feet minimum
   (d) 6- 8% grade — 400 feet minimum
   (e) 8-10% grade — 250 feet minimum
5. Maximum grade 10%.

**Figure 2. Typical Culvert Construction**

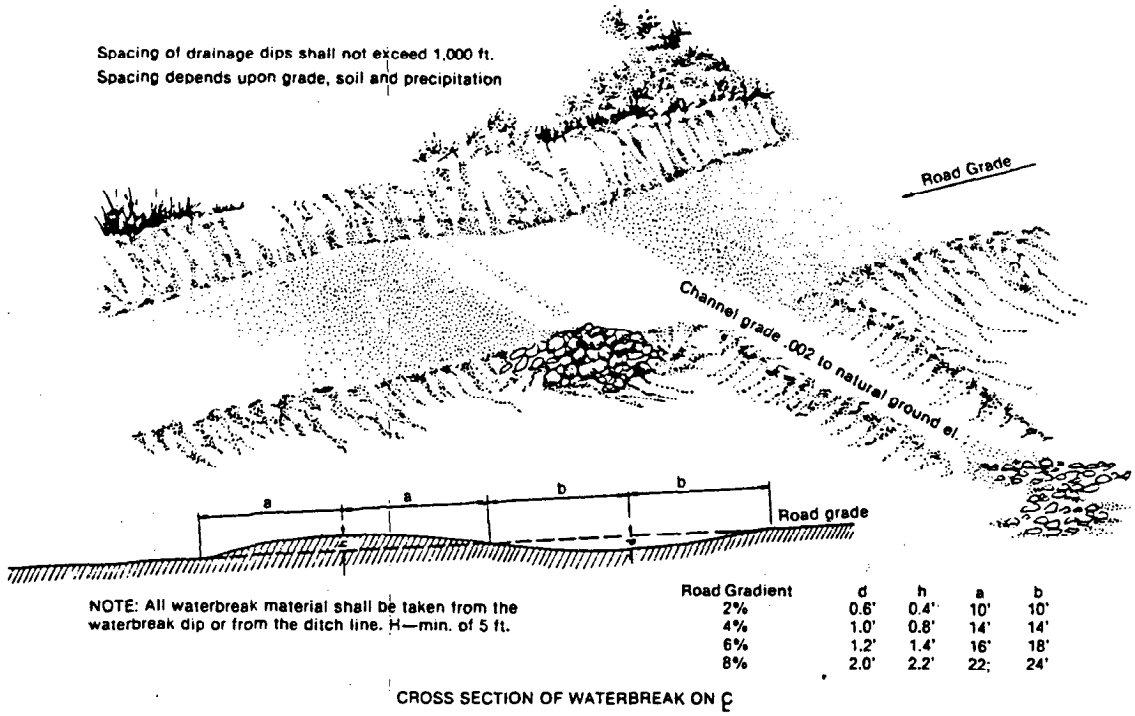



ACCEPTABLE



NOT ACCEPTABLE

**Figure 3. Typical Culvert Installation**




| Road Gradient | d | h | a | b |
|---|---|---|---|---|
| 2% | 0.6' | 0.4' | 10' | 10' |
| 4% | 1.0' | 0.8' | 14' | 14' |
| 6% | 1.2' | 1.4' | 16' | 18' |
| 8% | 2.0' | 2.2' | 22' | 24' |

Figure 4. "Thank-u-Mam" for Slight to Moderate Slope for Access Roads

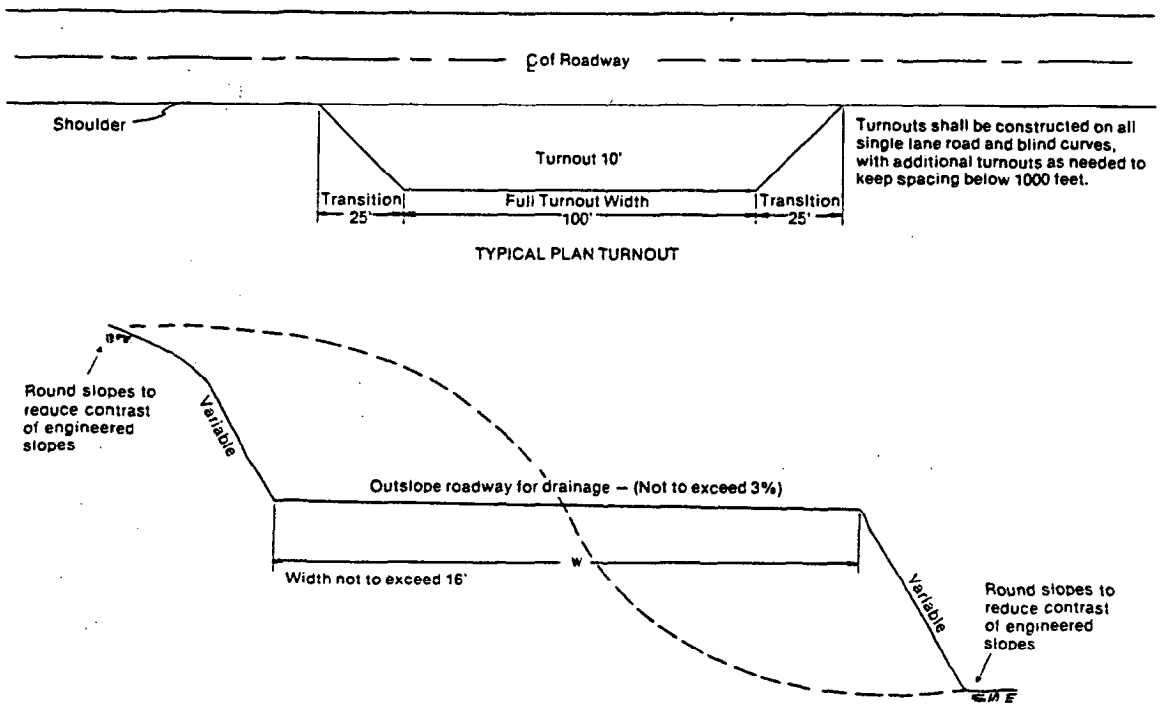



Figure 5. Typical Temporary Service Road

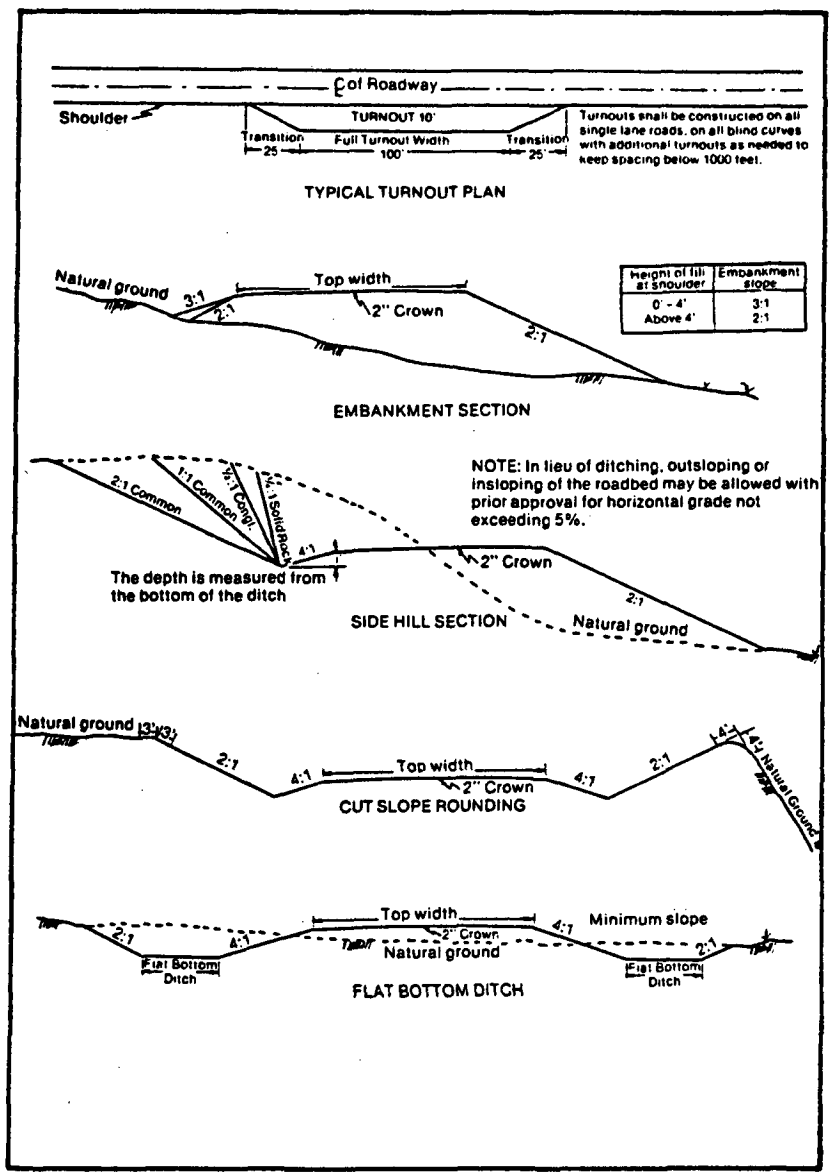



**Figure 6. Typical Road Section**

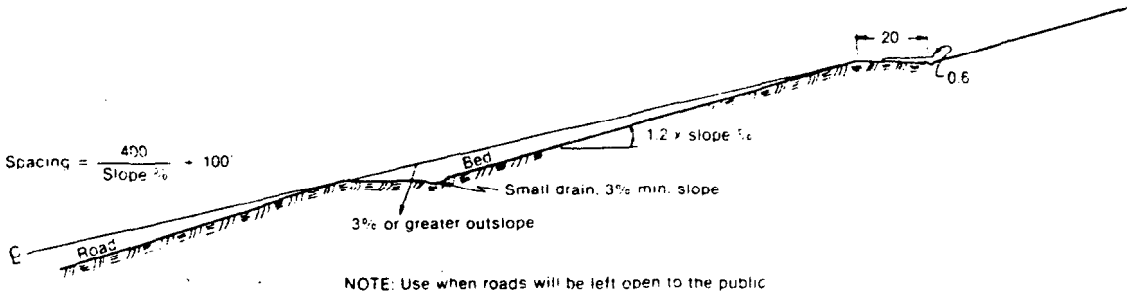



**Figure 7. Broad-Based Drainage Dip**
**Use for permanent roads where gradient does not exceed 6%**

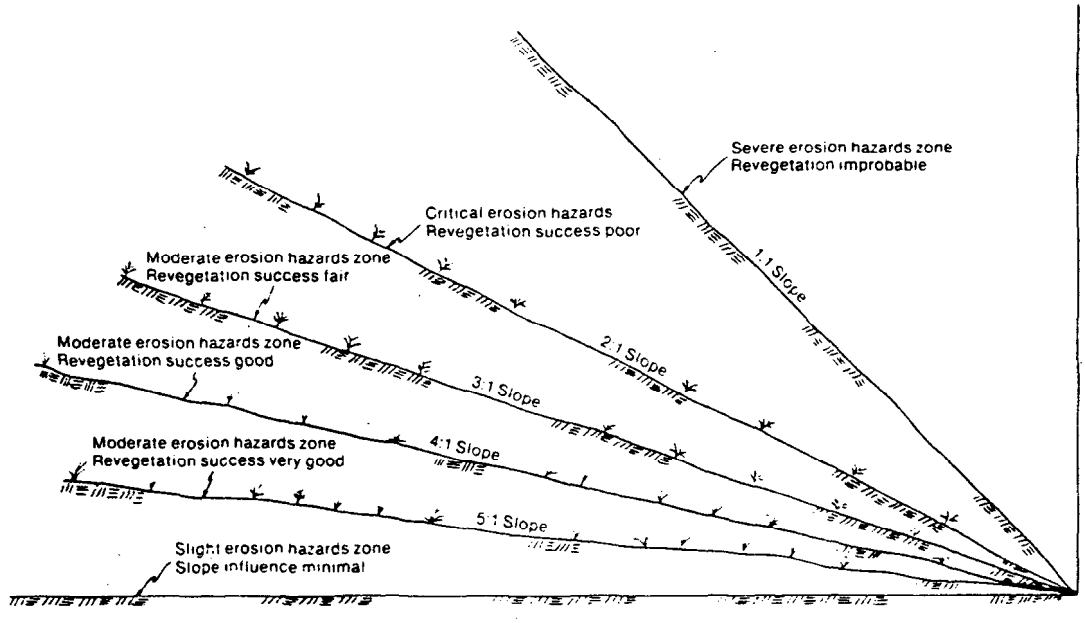



**Figure 8. Influence of Percent Slope on Revegetation**

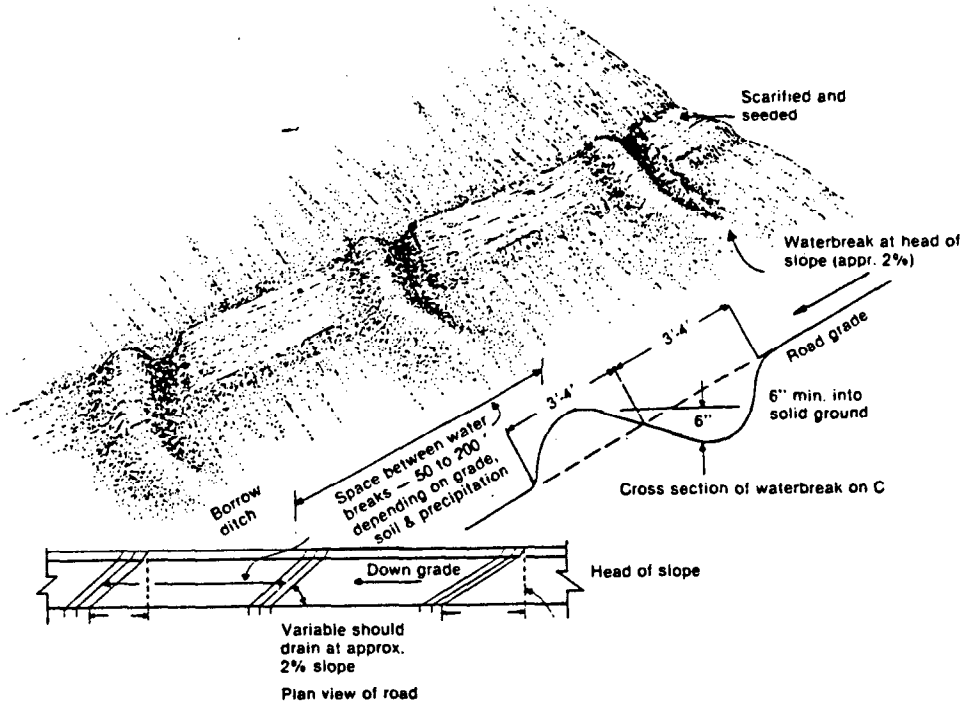



**Figure 9. Waterbreak Construction**
**For access roads and disturbed slopes that will be closed to traffic after operator use**

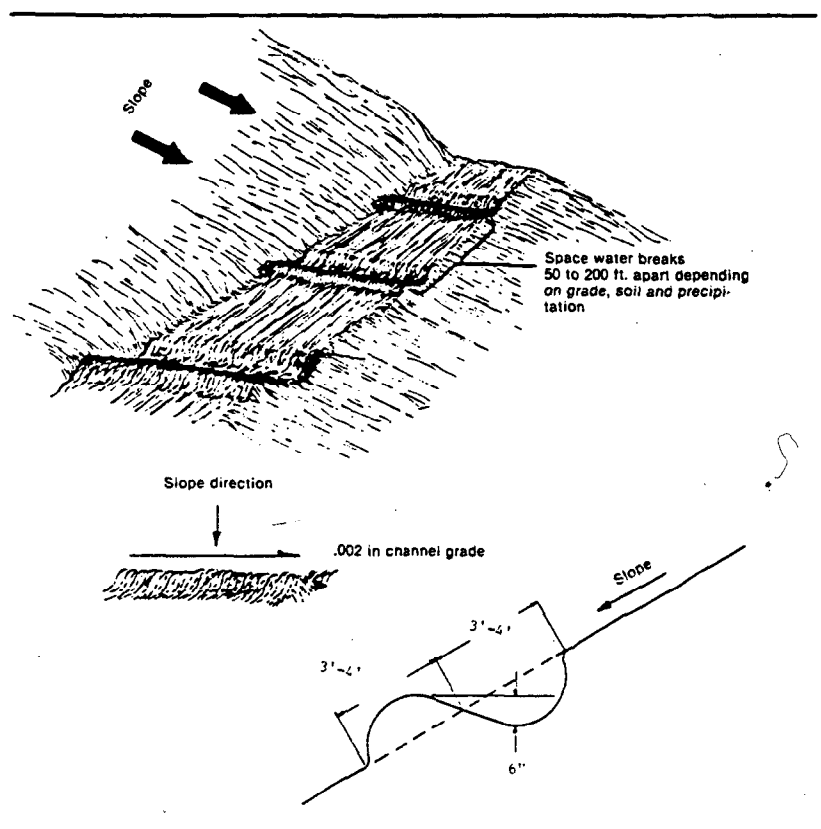



Figure 10. Waterbreak Construction For Pipeline and Buried Cables

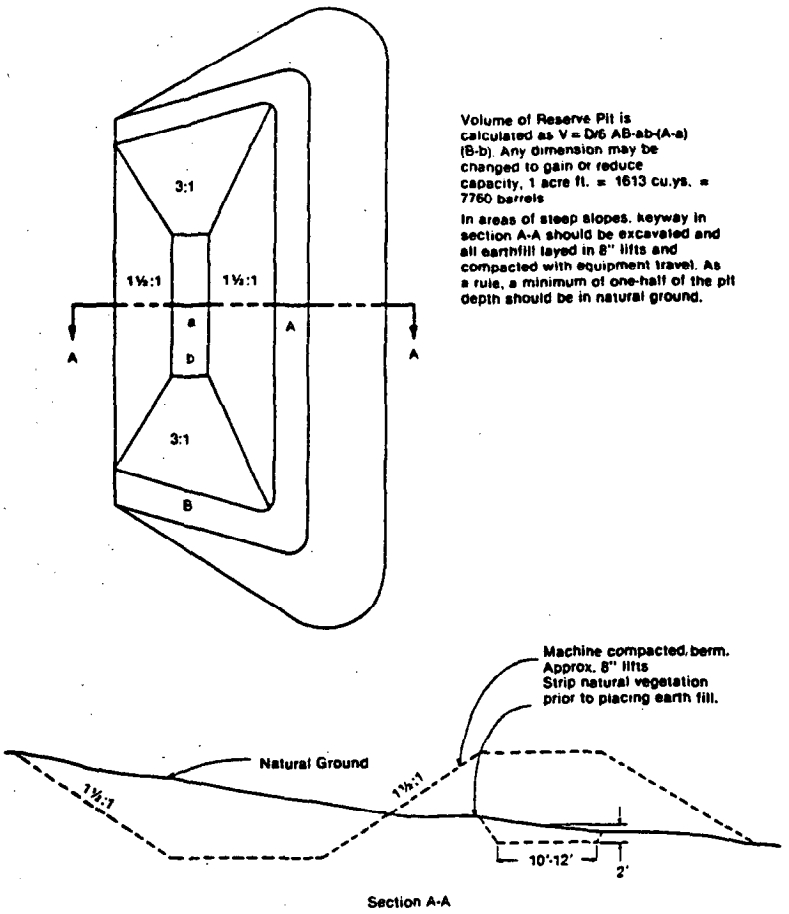



**Figure 11. Reserve Pit Construction in Areas of Environmental Concern**

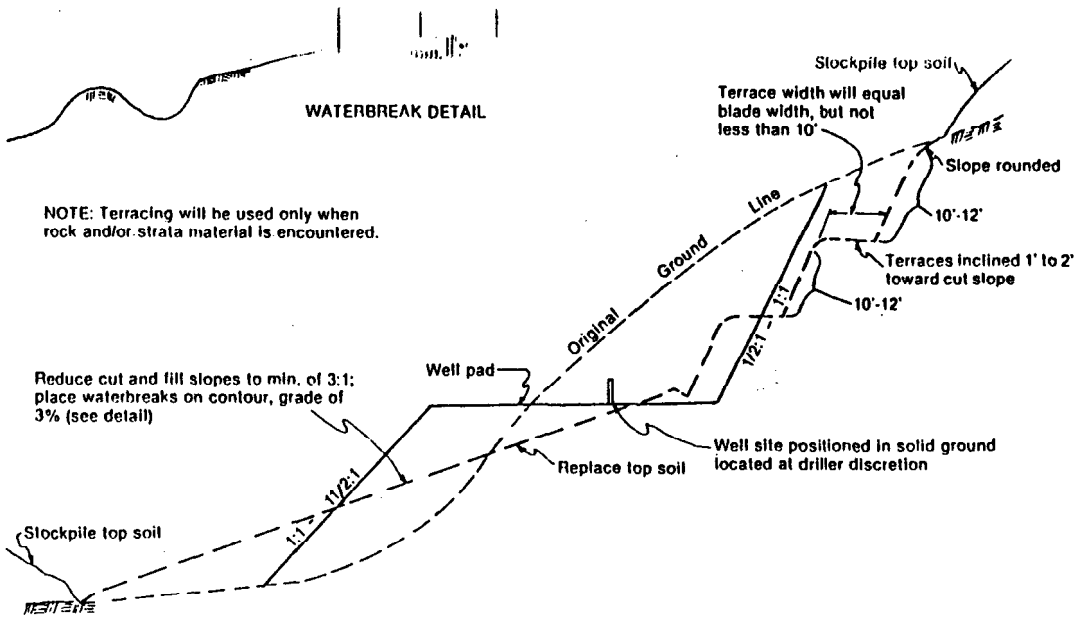



**Figure 12. Well Site Restoration and Stabilization by Terracing Cut Slopes**

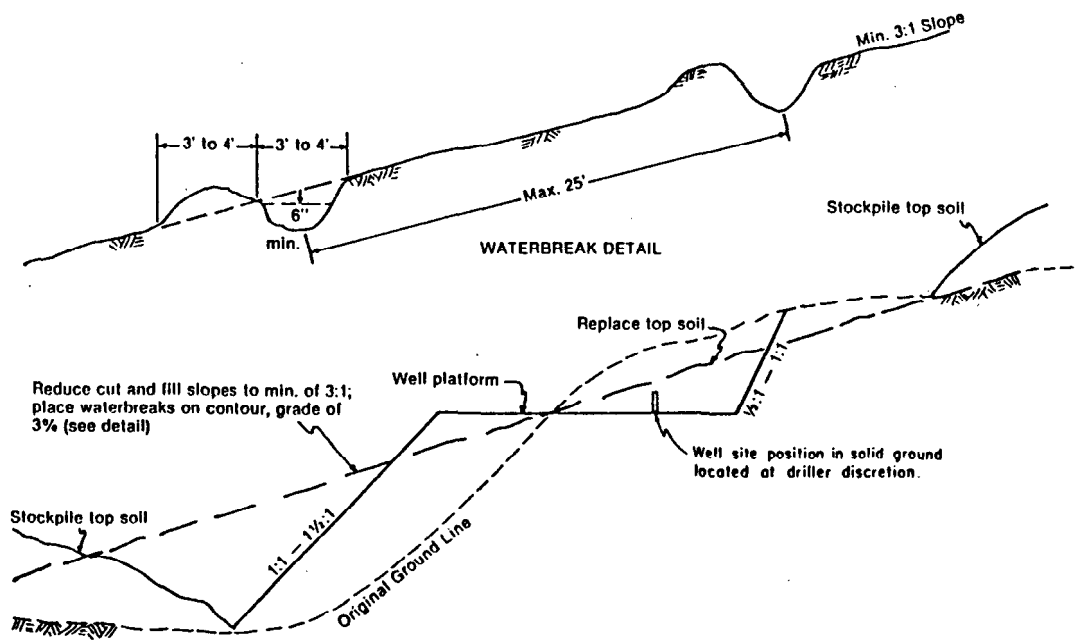



**Figure 13. Well Site Restoration and Stabilization by Slope Reduction**

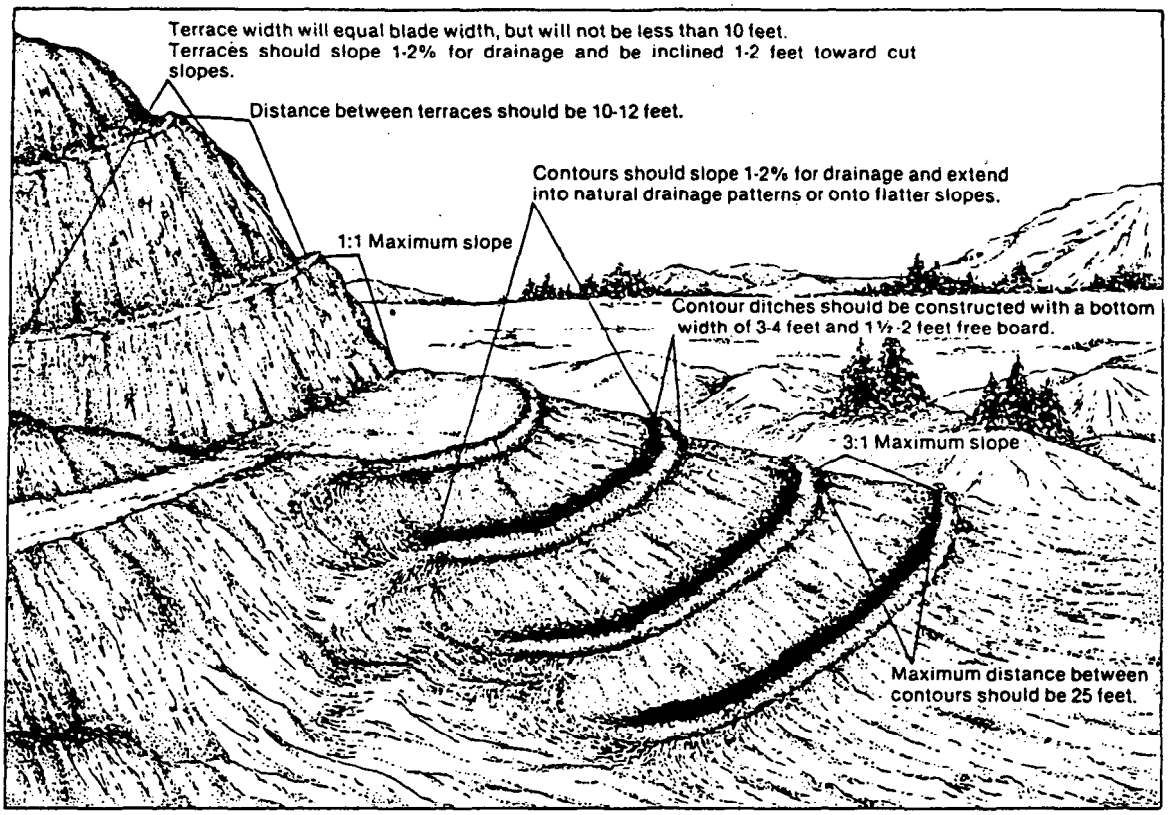



**Figure 14. Well Site Restoration and Stabilization by Terracing Cut Slopes Fill slope shows waterbreaks on reduced slope**

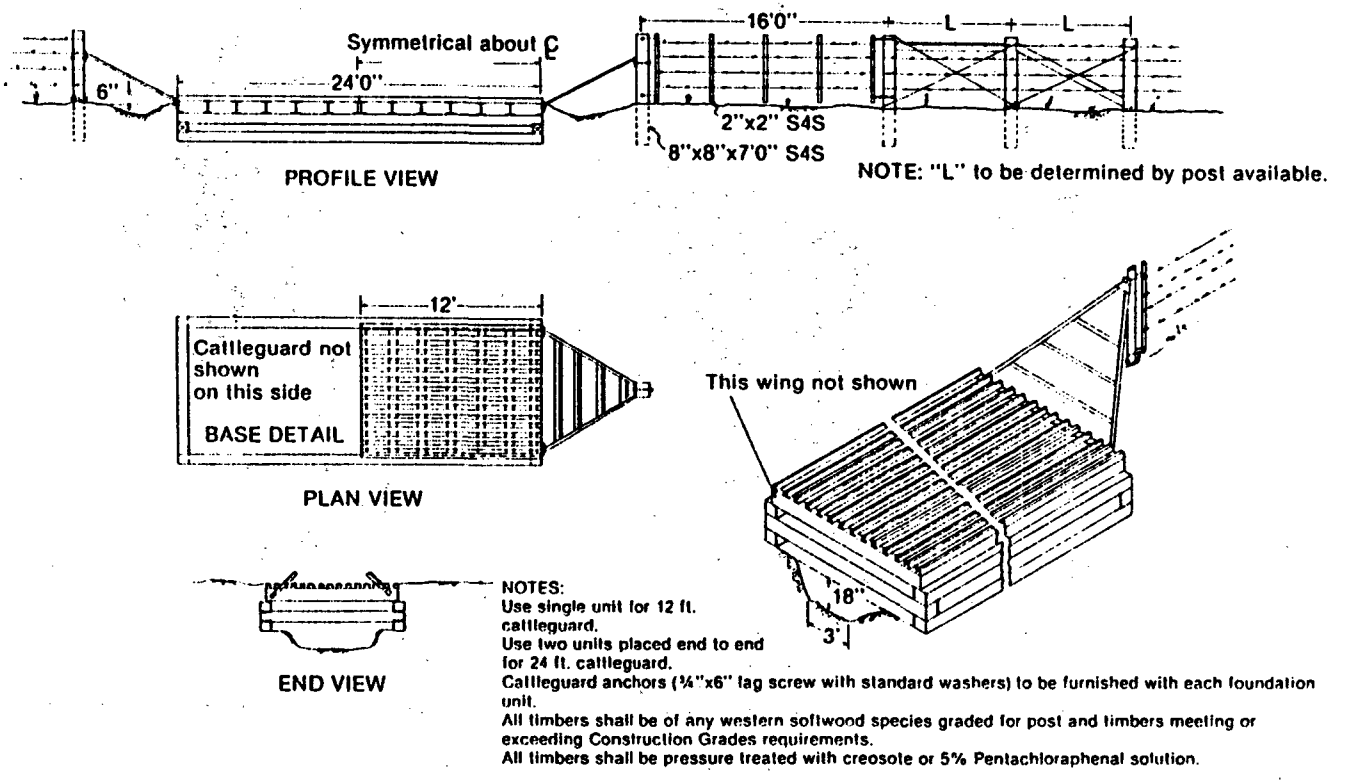



**Figure 15. Typical Wood Base Cattleguard**

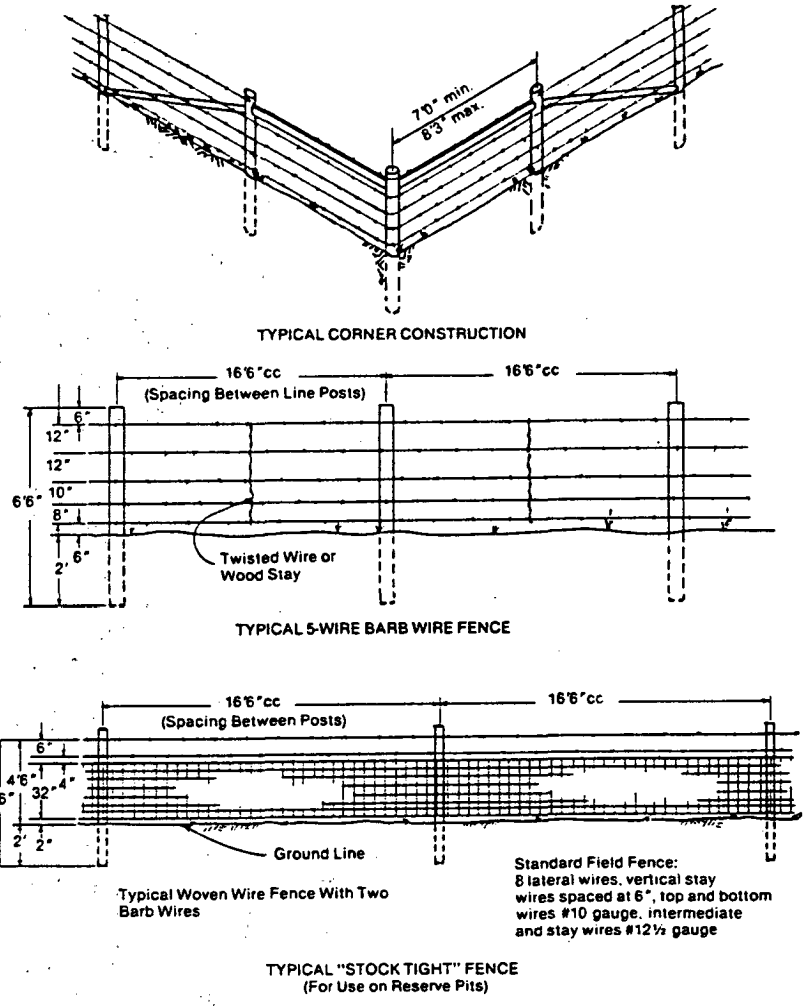
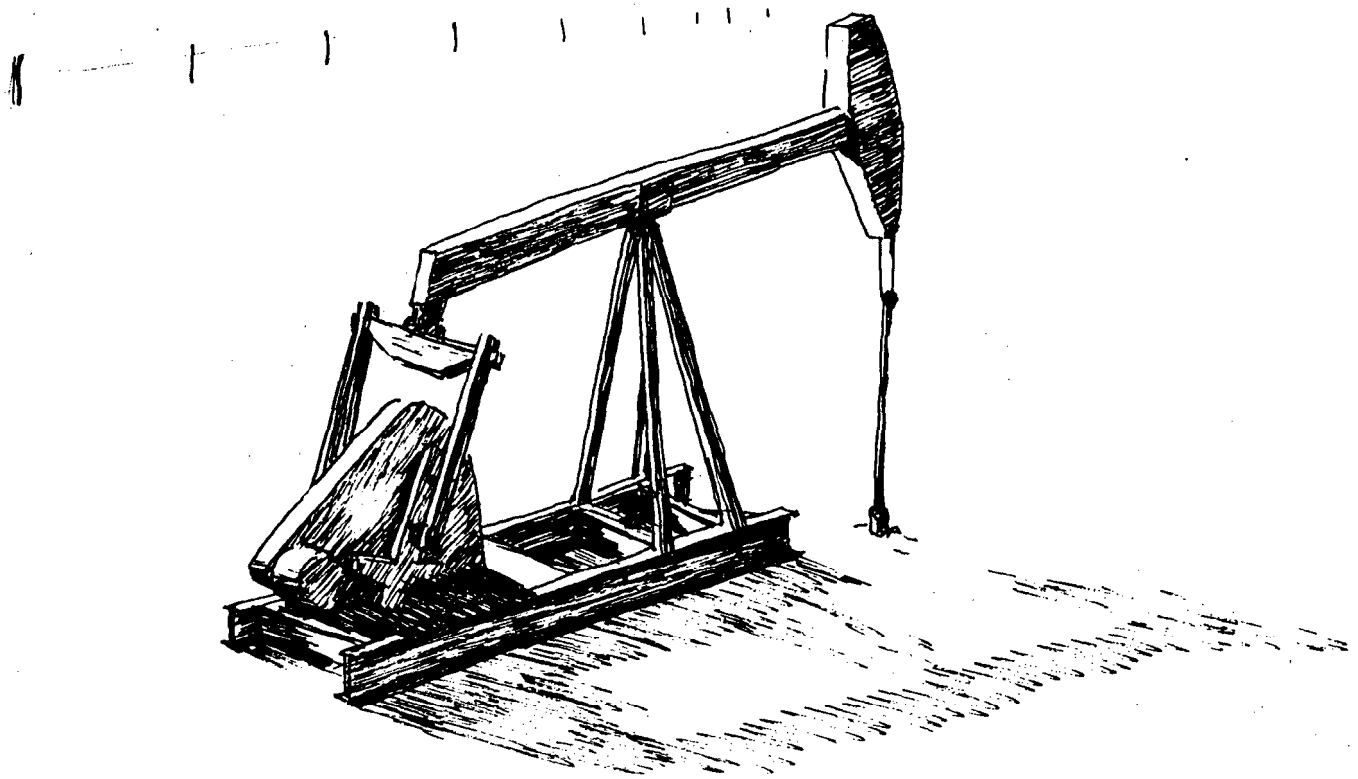



**Figure 16. Typical Fence Construction**

# SPECIAL STIPULATIONS

The following stipulations would be added, as prescribed in this plan, to future oil and gas leases on both Federal surface and split-estate lands. The actual wording of these stipulations may be adjusted at the time of leasing to reflect future legislation, court decisions, or policy changes; however, the protection standards in these stipulations would be maintained. Any change to the protection content of the stipulation would require an amendment to the RMP/EIS.



**APPENDIX B**

Serial No. _____

TIMING LIMITATION STIPULATION

No surface use is allowed during the following time period(s). This stipulation does not apply to operation and maintenance of production facilities.

December 15 to March 31

On the lands described below:

For the purpose of (reasons): Protecting crucial deer, elk, antelope, or bighorn sheep winter range from activities that would cause these species to abandon areas of crucial winter cover and forage for less suitable ranges; San Luis Resource Management Plan (p. ).

An exception to this stipulation may be approved if it can be demonstrated to the satisfaction of the Authorized Officer that the crucial winter range is (1) not being utilized and is expected to remain in such a condition because of a temporary change in climate and/or habitat, or that (2) impacts can be mitigated to avoid the abandonment of crucial winter cover and forage.

This stipulation may be waived by the Authorized Officer only upon a determination that crucial winter range does not exist within the lease.

Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manual 1624 and 3101 or FS Manual 1950 and 2820.)

Serial No. _____

TIMING LIMITATION STIPULATION

No surface use is allowed during the following time period(s). This stipulation does not apply to operation and maintenance of production facilities.

February 15 to June 30

On the lands described below:

For the purpose of (reasons): Protecting waterfowl from activities that would alter breeding behavior, increase the incidence of nest abandonment and decrease breeding success; San Luis Resource Management Plan (p. ).

An exception to this stipulation may be approved if it can be demonstrated to the satisfaction of the Authorized Officer that the waterfowl nesting area is (1) not being utilized and is expected to remain in such a condition because of a temporary change in climate and/or habitat, or that (2) impacts can be mitigated to result in the avoidance of nest abandonment and decreased breeding success.

This stipulation may be waived by the Authorized Officer only upon a determination that waterfowl nesting areas do not exist with the lease.

Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manual 1624 and 3101 or FS Manual 1950 and 2820.)

**APPENDIX B**

Serial No. _____

TIMING LIMITATION STIPULATION

No surface use is allowed during the following time period(s). This stipulation does not apply to operation and maintenance of production facilities.

May 15 to June 30

On the lands described below:

For the purpose of (reasons): Protecting pronghorn antelope range from activities which would force antelope into less suitable range during the fawning season; San Luis Resource Management Plan (p. ).

An exception to this stipulation may be approved if it can be demonstrated to the satisfaction of the Authorized Officer that the antelope fawning area is (1) not being utilized and is expected to remain in such a condition because of a temporary change in climate and/or habitat, or that (2) impacts can be mitigated to result in avoiding antelope disturbance during fawning season.

This stipulation may be waived by the Authorized Officer only upon a determination that antelope fawning range does not exist within the lease.

Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manual 1624 and 3101 or FS Manual 1950 and 2820.)

Serial No. _____

NO SURFACE OCCUPANCY STIPULATION

No surface occupancy or use is allowed on the lands described below (legal subdivision or other description):

For the purpose of: Protecting lambing areas selected by bighorn sheep for topography, slope, aspect, and escape cover; San Luis Resource Management Plan (p. ).

An exception to this stipulation may be approved if it can be demonstrated to the satisfaction of the Authorized Officer that the lambing area is (1) not being utilized and is expected to remain in such condition because of a temporary change in climate and/or habitat, *and* (2) operations can be conducted, which avoid a change in the topography, slope, aspect, and escape cover.

This stipulation may be waived by the Authorized Officer only upon a determination that bighorn sheep lambing areas do not exist within the lease.

Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manual 1624 and 3101 or FS Manual 1950 and 2820.)

**APPENDIX B**

Serial No. _____

NO SURFACE OCCUPANCY STIPULATION

No surface occupancy or use is allowed on the lands described below (legal subdivision or other description):

For the purpose of: Protecting the scenic and recreational value as well as the physical improvements of the Monte Vista Park; San Luis Resource Management Plan (p. ).

An exception to this stipulation may be approved if it can be demonstrated to the satisfaction of the Authorized Officer that operations can be conducted without causing unacceptable impacts to the scenic, recreational, and physical improvement values.

This stipulation may be waived by the Authorized Officer only upon a determination that the Monte Vista Park is no longer utilized for recreational purposes.

Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manual 1624 and 3101 or FS Manual 1950 and 2820.)

Serial No. _____

NO SURFACE OCCUPANCY STIPULATION

No surface occupancy or use is allowed on the lands described below (legal subdivision or other description):

For the purpose of: Protecting the historic, scenic and recreational values as well as the physical improvements of the Pike Stockade Historic Site; San Luis Resource Management Plan (p. ).

An exception to this stipulation may be approved if it can be demonstrated to the satisfaction of the Authorized Officer that operations can be conducted without causing unacceptable impacts to the historic, scenic, recreational and physical improvement values.

This stipulation may be waived by the Authorized Officer only upon a determination that Pike Stockade Historic Site no longer exists.

Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manual 1624 and 3101 or FS Manual 1950 and 2820.)

**APPENDIX B**

Serial No. _____

NO SURFACE OCCUPANCY STIPULATION

No surface occupancy or use is allowed on the lands described below (legal subdivision or other description).:

For the purpose of: Protecting the recreational and scenic values of the Rio Grande Special Recreational Management Area (SRMA) in its natural setting; San Luis Resource Management Plan (p. ).

An exception to this stipulation may be approved if it can be demonstrated to the satisfaction of the Authorized Officer that operations can be conducted without causing unacceptable impacts to the recreational, scenic and natural values.

This stipulation may be waived by the Authorized Officer only upon a determination that the special recreation and scenic values as identified in the San Luis RMP are no longer present.

Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manual 1624 and 3101 or FS Manual 1950 and 2820.)

Serial No. _____

## NO SURFACE OCCUPANCY STIPULATION

No surface occupancy or use is allowed on the lands described below (legal subdivision or other description):

For the purpose of: Protecting the recreational and scenic values of the Flat Top ACEC/SPNM in its natural setting; San Luis Resource Management Plan (p. ).

An exception to this stipulation may be approved if it can be demonstrated to the satisfaction of the Authorized Officer that operations can be conducted without causing unacceptable impacts to the recreational, scenic and natural values.

Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manual 1624 and 3101 or FS Manual 1950 and 2820.)

**APPENDIX B**

Serial No. _____

NO SURFACE OCCUPANCY STIPULATION

No surface occupancy or use is allowed on the lands described below (legal subdivision or other description):

For the purpose of: Protecting the natural and scenic values of the Rio Grande Wild and Scenic River; San Luis Resource Management Plan (p. ).

An exception to this stipulation may be approved if it can be demonstrated to the satisfaction of the Authorized Officer that operations can be conducted without causing unacceptable impacts to the natural and scenic values.

Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manual 1624 and 3101 or FS Manual 1950 and 2820.)

Serial No. _____

NO SURFACE OCCUPANCY STIPULATION

No surface occupancy or use is allowed on the lands described below (legal subdivision or other description):

For the purpose of: Protecting residential development within the Town of South Fork, Colorado; San Luis Resource Management Plan (p. ).

An exception to this stipulation may be approved if it can be demonstrated to the satisfaction of the Authorized Officer that operations can be conducted without causing unacceptable impacts to the residential values.

This stipulation may be waived by the Authorized Officer only upon determination that residential development no longer exists within the lease.

Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manual 1624 and 3101 or FS Manual 1950 and 2820.)

# APPENDIX C

# WILDLIFE HABITAT MANAGEMENT

## Table C-1
## BLM WETLAND AREAS — CONDITION AND TREND

| Area | Wetland Acres | Condition | Trend | Remarks |
|---|---|---|---|---|
| Blanca WHA | 1,400 | Fair-good | Increasing | Under HMP; lack of funding has delayed both maintenance and development |
| Emperius | 200 | Fair-poor | Decreasing | Acquired surplus property from the BR; Closed Basin project has water rights capable of 950 acres, but requires redevelopment |
| Flat Top | 24 | Poor | Stable | No management at present; water source is no control irrigation return flows |
| Rio Grande | 76 | Poor | Stable | Over grazed by river trespass cattle (only western side of river is BLM land) |
| Mishak | 16 | Poor | Decreasing | Decreasing well flows and unprotected from livestock |
| Dry Lakes | 39 | Poor | Decreasing | Depleted well flows; loss of historic natural flows |
| Perennial streams and stock reservoirs | 502 | Fair-good | Increasing | Improvement through implemented AMPs |

## Table C-2
## ANTELOPE POPULATION AND HABITAT TREND

| DOW Unit Number | Habitat Condition | Habitat Trend | 10-Year Population Trend | Remarks |
|---|---|---|---|---|
| A73 | Fair | Stable | Increasing | Water distribution inadequate in Biedell-Tracy area |
| A74 | Good | Stable | Stable | |
| A76 | Fair | Stable | Increasing | Some net wire impeding movement |
| A77 | Fair | Stable | Increasing | |
| A78 | Good | Stable | Increasing | Small unhunted population; winter habitat is limiting factor |
| A79 | Good | Stable | Increasing | |
| A80 | Fair | Stable | Increasing | Small unhunted population; poaching is the limiting factor; some net wire impeding movement |

## Table C-3
## DEER POPULATION AND HABITAT TREND

| DOW Unit Number | Habitat Condition | Habitat Trend | 10-Year Population Trend | Remarks |
|---|---|---|---|---|
| 68 | Fair | Stable | Increasing | |
| 681 | Fair | Stable | Increasing | |
| 79 | Fair | Stable | Decreasing | |
| 80 | Fair-Good | Increasing | Stable | Vehicle disturbance is a problem on crucial winter range |
| 81 | Fair | Stable | Decreasing | Vehicle disturbance is a problem in open winters on crucial winter range |
| 82 | Fair | Decreasing | Stable | Browse stands are generally unsatisfactory in much of this unit. |

## Table C-4
## SHEEP POPULATION AND HABITAT TREND

| DOW Unit Number | Habitat Condition | Habitat Trend | 10-Year Population Trend | Remarks |
|---|---|---|---|---|
| S10 | Fair | Stable | Decreasing | Lung worm die off in 1982; some livestock competition on key foraging areas. This unit has been trapped repeatedly to provide transplants to other areas of the state |
| Natural Arches | Fair | Stable | Increasing | |
| S29N | Fair | Stable | Increasing | |
| S29S | Fair | Stable | Increasing | |

## Table C-5
## ELK POPULATION AND HABITAT TREND

| DOW Unit Number | Habitat Condition | Habitat Trend | 10-Year Population Trend | Remarks |
|---|---|---|---|---|
| 68 | Fair | Stable | Increasing | Cover is limited in quality because of timber harvest |
| 681 | Fair | Stable | Increasing techniques | |
| 79 | Fair | Stable | Decreasing | |
| 80 | Fair | Increasing | Decreasing | |
| 81 | Fair | Increasing | Decreasing | Vehicle disturbance is a problem in open winters on crucial winter range. |
| 82 | Fair | Increasing | Increasing | |

## Table C-6
## AQUATIC HABITAT CONDITION AND TREND ON SELECTED AQUATIC RESOURCES IN SLRA

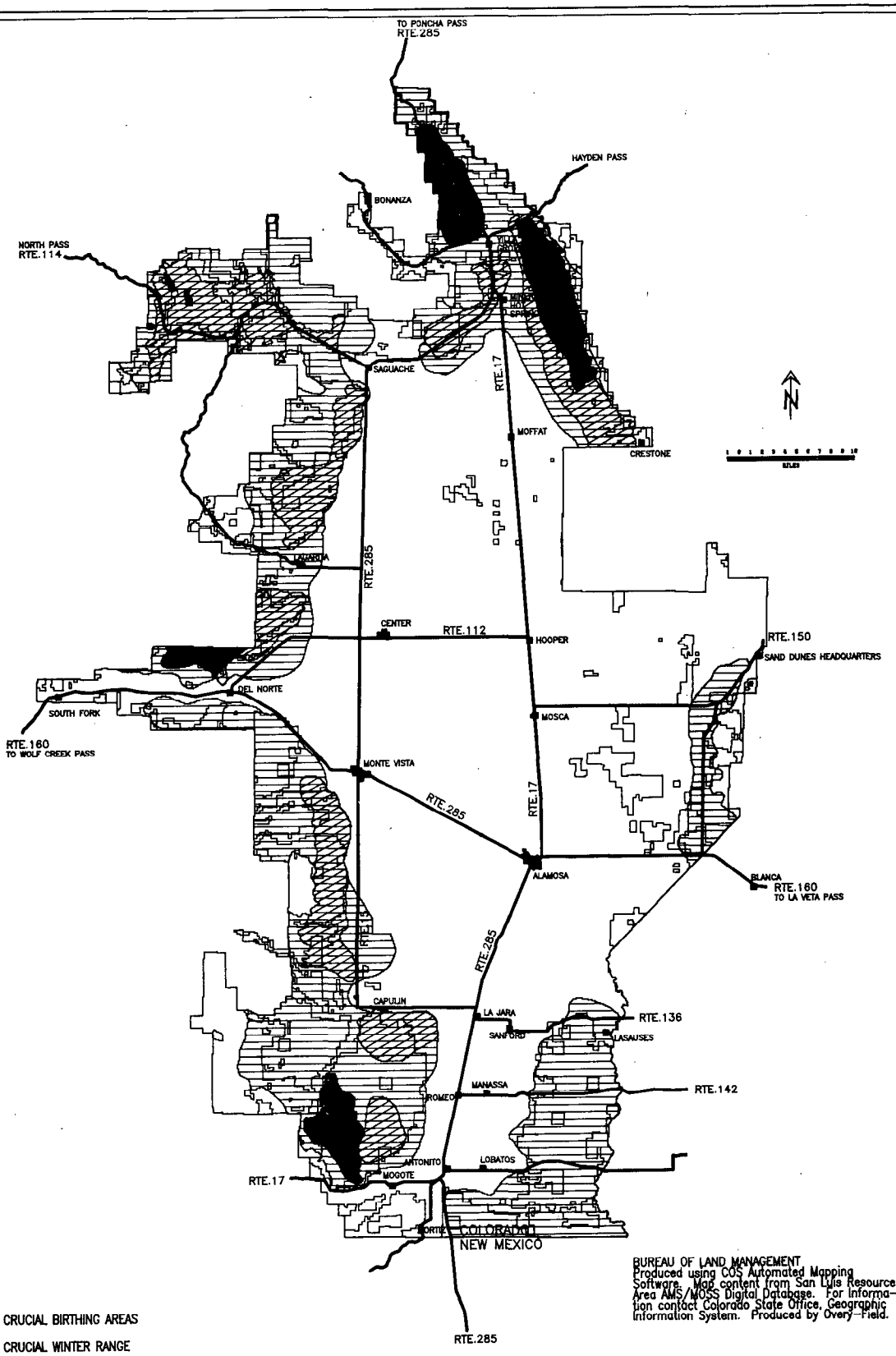
| Name | Miles or Acres | Stability Community | Game Species Rating | Present |
|---|---|---|---|---|
| Lower Ford Cr. | 1.5 mi. | Poor | Declining | Bt, C, RG |
| Middle Ford Cr. | 0.5 mi. | Good | Declining | Bt, C, RG |
| Upper Ford Cr. | 1.0 mi. | Good | Improving | Bt |
| Baxter Cr. | 1.5 mi. | Poor | Declining | Unknown |
| Lower Tuttle Cr. | 1.0 mi. | Good | Improving | Bt, RG |
| Upper Tuttle Cr. | 1.0 mi. | Fair | Improving | RG |
| Lower Sheep Cr. | 0.3 mi. | Excellent | Improving | Bt, B, R |
| Upper Sheep Cr. | 1.7 mi. | Excellent | Stable | Bt |
| Hat Springs Cr. | 1.8 mi. | Poor | Declining | Unknown |
| Cross Cr. | 0.5 mi. | Good | Stable | Bt |
| Kerber Cr | 0.5 mi. | Poor | Declining | Nonexistent |
| Fisher Cr. | 0.5 mi. | Poor | Stable | Nonexistent |
| Middle San Luis Cr. | 0.4 mi. | Fair | Improving | Bt |
| Upper San Luis Cr. | 0.6 mi. | Good | Stable | Bt |
| Dorsey Cr. | 0.5 mi. | Good | Improving | Bt |
| Middle Garner Cr. | 0.3 mi. | Fair | Stable | Bt |
| Lower Garner Cr. | 1.7 mi. | Fair | Improving | Bt |
| Upper Garner Cr. | 0.3 mi. | Good | Stable | Bt |
| Rio Grande (A) | 7.0 mi. | Good | Stable | B, NP, CC |
| Rio Grande (B) | 5.0 mi. | Good | Stable | B, NP, CC |
| La Jara Cr. | 2.5 mi. | Good | Improving | R, Bt |
| Alamosa River | 2.0 mi. | Good | Stable | B, R, C |
| Alder Cr. | 0.4 mi. | Good | Stable | Bt |
| Rito Alto Cr. | 0.3 mi. | Good | Stable | Bt |
| Cotton Cr. | 0.8 mi. | Excellent | Stable | Bt, R, C |
| Black Canyon Cr. | 0.8 mi. | Excellent | Stable | Nonexistent |
| Quary Cr. | 0.3 mi. | Excellent | Stable | Bt |
| Lower Raspberry Cr. | 0.5 mi. | Fair | Stable | Bt |
| Upper Raspberry Cr. | 0.5 mi. | Excellent | Stable | Bt |
| Eaglebrook Gulch | 0.6 mi. | Fair | Declining | Bt |
| Saguache Cr. | 0.3 mi. | Excellent | Stable | R, B, C, Bt |
| Spanish Cr. | 0.3 mi. | Excellent | Stable | Bt |
| Rock Cr. | 0.2 mi. | Excellent | Stable | Bt, R, C |
| Honker Fish Pond 1 | 1.0 ac. | Fair | Declining | R |
| Honker Fish Pond 2 | 7.2 ac. | Good | Stable | LB, BG |
| Honker Fish Pond 3 | 6.0 ac. | Fair | Declining | R |
| Honker Fish Pond 4 | 4.0 ac. | Poor | Stable | Nonexistent |
| Honker Fish Pond 5 | 8.0 ac. | Poor | Stable | Nonexistent |
| Honker Fish Pond 7 | 1.5 ac. | Good | Stable | R |

Table C-6 (Continued)

| Name | Miles or Acres | Stability Community | Game Species Rating | Present |
|---|---|---|---|---|
| Heron Fish Pond | 10.0 ac. | Poor | Declining | Nonexistent |
| Chico Fish Pond | 3.5 ac. | Fair | Declining | R |
| Pintail Fish Pond | 1.0 ac. | Fair | Improving | R |
| Snipe Fish Pond | 3.0 ac. | Poor | Declining | Nonexistent |
| Widgeon Fish Pond | 8.0 ac. | Fair | Improving | R |
| Aveocet Fish Pond | 18.0 ac. | Fair | Declining | R |
| Alkali Fish Pond | 16.0 ac. | Good | Improving | R, LB, BG |
| Axel Fish Pond 1 | 2.2 ac. | Good | Stable | LB, BG |
| Axel Fish Pond 2 | 0.8 ac. | Good | Stable | R |
| Axel Fish Pond 3 | 1.0 ac. | Good | Improving | R |
| Axel Fish Pond 4 | 3.2 ac. | Good | Stable | R |
| Axel Fish Pond Marsh 4 | 12.0 ac. | Good | Declining | LB, RG |
| Axel Fish Pond 5 | 2.5 ac. | Fair | Declining | Nonexistent |
| Axel Fish Pond 6 | 8.5 ac. | Poor | Stable | Nonexistent |
| Mallard Fish Pond 1 | 1.0 ac. | Good | Stable | R |
| Mallard Marsh Fish | 14.0 ac. | Good | Declining | LB, BG |
| Mallard Fish Pond 2 | 9.0 ac. | Poor | Declining | Nonexistent |
| Mallard Fish Pond 3 | 1.0 ac. | Fair | Stable | R |
| Mallard Fish Pond 4 | 3.5 ac. | Fair | Stable | R, BG, LB |
| Mallard Fish Pond 5 | 29.0 ac. | Fair | Declining | LB, BG |
| Mallard Fish Pond 6 | 0.8 ac. | Good | Stable | R |
| Mallard 6 Fish Pond 2 | 2.0 ac. | Good | Stable | R, RB, BG |
| Mallard Fish Pond 7 | 0.8 ac. | Good | Stable | R |
| Mallard 7 Fish Pond 2 | 1.5 ac. | Poor | Stable | LB, BG |

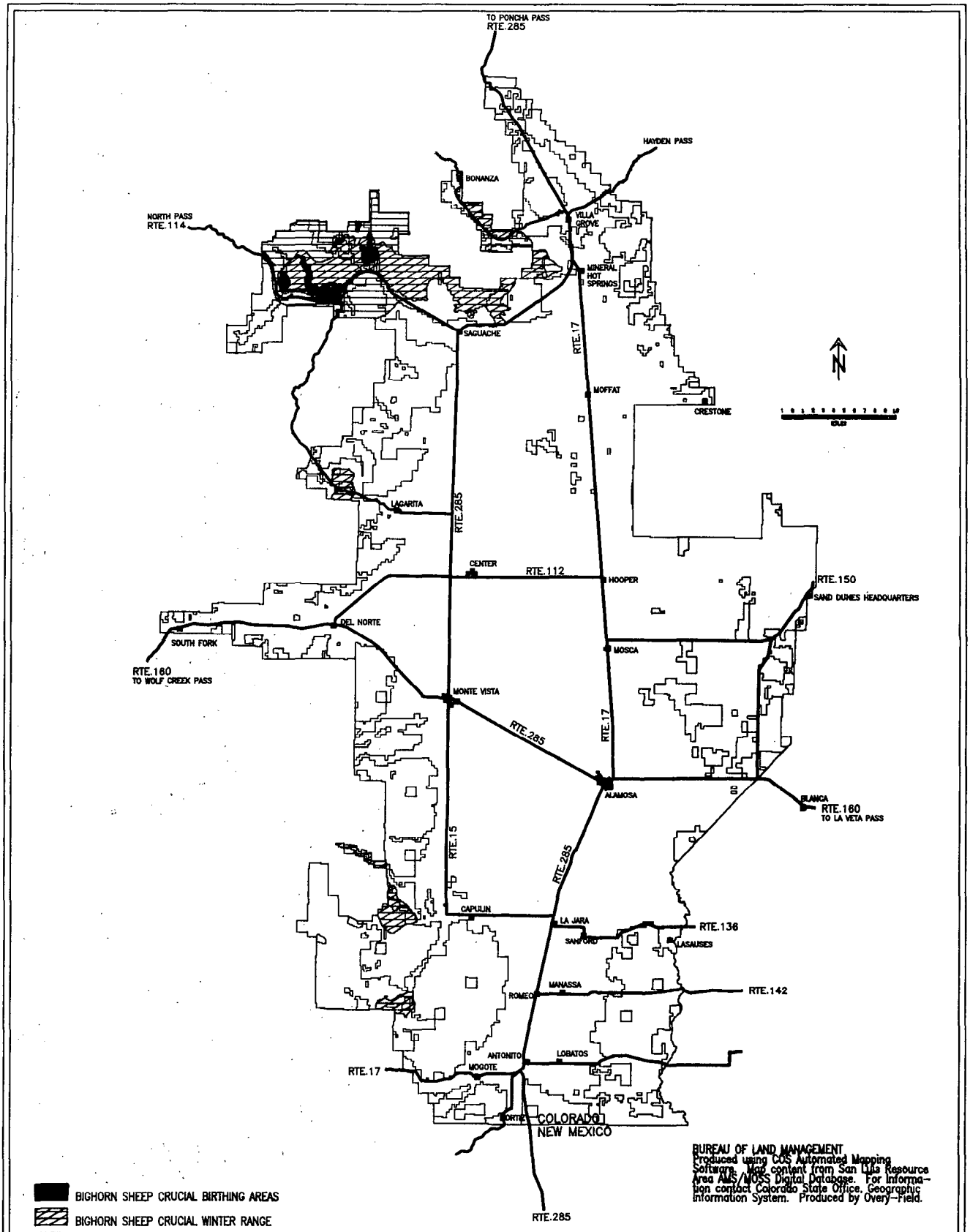
Key for species:

Bt - Brooktrout
B - Brown trout
R - Rainbow trout
C - Cutthroat trout
RG - Rio Grande cutthroat trout
CC - Channel catfish
NP - Northern pike
LB - Largemouth bass
BG - Bluegill



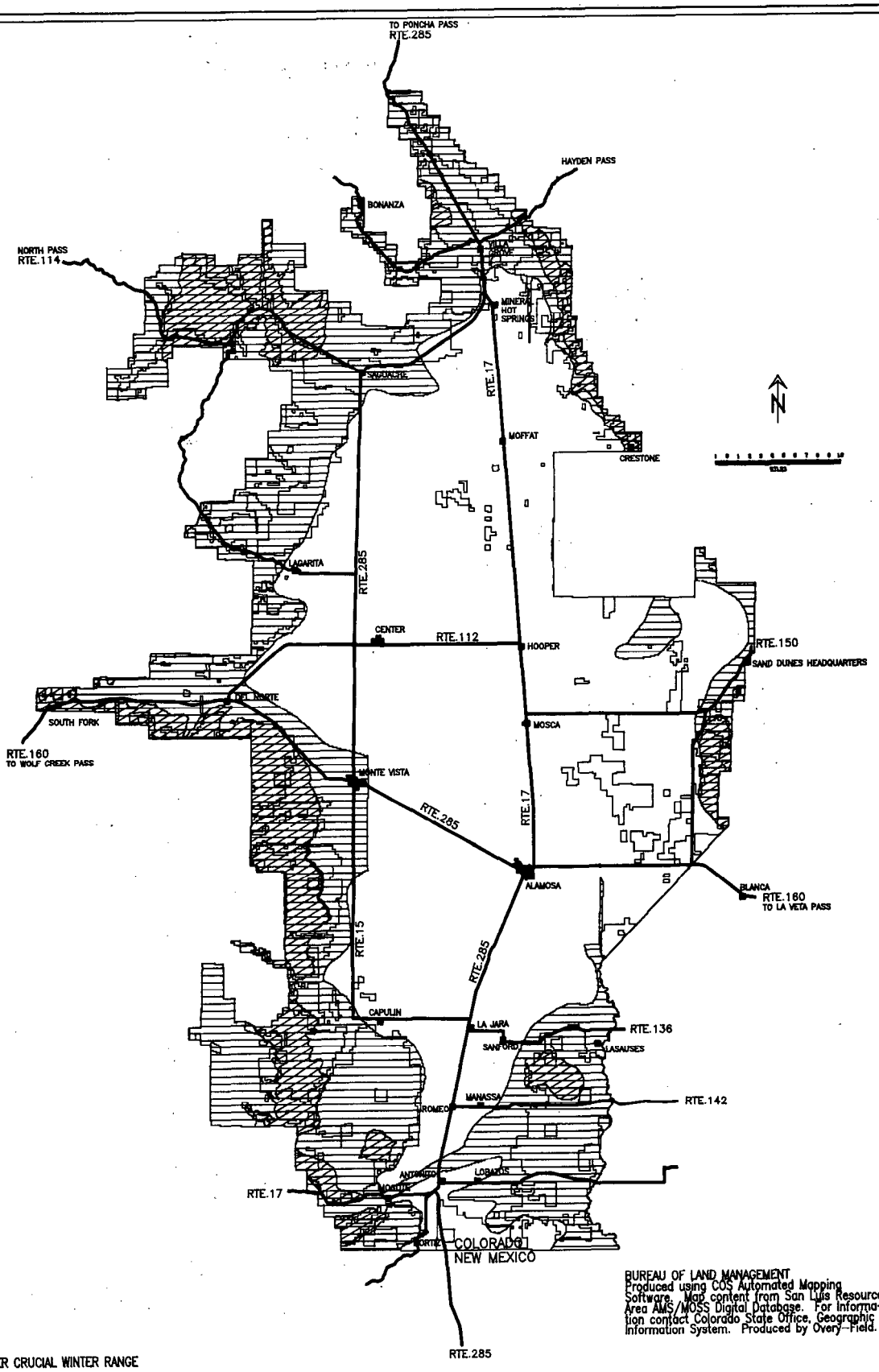

FOR A BETTER PERSPECTIVE OF BLM OWNERSHIP, SEE THE FOLDOUT MAP AT THE BACK OF THE PLAN.

## Map C-1
## Antelope Habitat



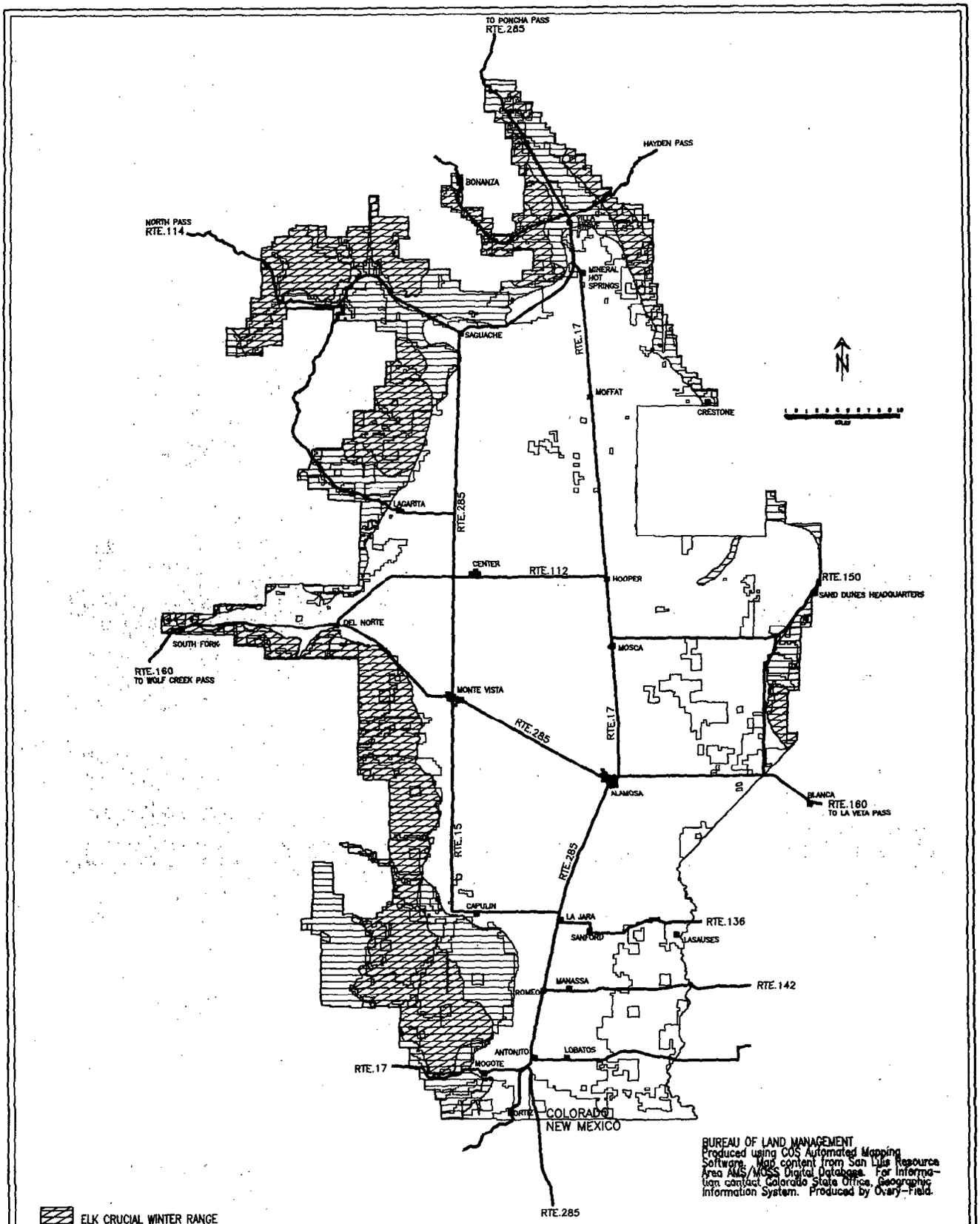

# Map C-2
## Bighorn Sheep Habitat

FOR A BETTER PERSPECTIVE OF BLM OWNERSHIP, SEE THE FOLDOUT MAP AT THE BACK OF THE PLAN.




FOR A BETTER PERSPECTIVE OF BLM OWNERSHIP, SEE THE FOLDOUT MAP AT THE BACK OF THE PLAN.

## Map C-3
## Mule Deer Habitat




**Map C-4**
**Elk Habitat**

# APPENDIX D

# LIVESTOCK FORAGE MANAGEMENT

# APPENDIX D

# LIVESTOCK GRAZING MANAGEMENT

The basic types of current or future grazing management systems and treatments to be used to meet management objectives are described below:

*Deferred Grazing:* Probably would involve one pasture; grazing would be deferred until after seed ripe of key plant(s).

*Deferred Rotation:* Would involve two or more pastures and livestock grazing would be deferred in one of the pastures successively until after seed ripe of key plant(s).

*Rest Rotation:* Would involve one or more pastures and provide rest for at least an entire year from livestock grazing successively in one or more of the pastures. Depending on the season of use and number of pastures, it would also involve delaying livestock grazing until after seed in one of the pastures then grazing allowed for seed trampling with the rest treatment following this treatment.

*Deferred Rest Rotation:* Would involve rest from livestock grazing for at least 1 year but beginning of grazing occurs after seed ripe.

*Holistic Resource Management (HRM):* Would involve stressing holism in the management of the total resources as opposed to management for individual resources. The concept of time management, as opposed to animal numbers, would be used to control overgrazing, overrest, and other plant, soil, and animal relationships. HRM provides a model that outlines goal setting, and identifies ecosystem blocks that need to be addressed to attain goals, tools available for dealing with ecosystems, and testing and management guidelines for selecting the tools. It involves constant planning, monitoring, replanning, controling, and testing. This management approach would only be allowed if total commitment for the program is obtained from the permittee.

*Season of Use or Class of Livestock* Would involve restrictions, if necessary, to avoid livestock-wildlife competition on crucial big game ranges.

*Range Improvements:* Would be used if necessary to facilitate implementation of intensive management of grazing. General types of improvements would include boundary and/or pasture fences, cattleguards, pipelines, wells, water storage tanks, rainfall catchment reservoirs, springs, and water troughs. The general locations and numbers of range improvements would be identified in the individual AMPs.

Table D-1 provides an allotment-specific summary of the livestock management program. Following is an explanation of the data presented in this table:

(1) Management category is the general management objective for each allotment. I = the most intensive management, with the objective of improving existing resource conditions; M = a less intensive management, with the objective of maintaining existing resource conditions; and C = the least intensive, or custodial, management.

(2) Active grazing preference is that portion of the total grazing preference in AUMs available to be licensed for use during any one grazing year.

(3) Voluntary nonuse/suspended grazing preference is that portion of the total grazing preference in AUMs temporarily withheld from active grazing use.

(4) Total grazing preference is the total number of livestock grazing AUMs on public lands apportioned and attached to base property owned or controlled by a permittee or lessee. Column (2) plus column (3) equals column (4).

(5) Class of livestock is the kind of livestock authorized to graze on an allotment. C = cattle; S = sheep; H = horses.

(6) Season of use is the time of year when livestock are present on the allotment. Sp = spring (5/1 to 6/15); Su = summer (6/16 to 9/15); Fa = fall (9/16 to 12/15); Wi = winter (12/16 to 2/28).

(7) Implementation status is the current status of the allotment management plan (AMP). IMP = Implemented working AMP; NOT = Scheduled AMP that has not been implemented; GS = Allotment with grazing system only; A dash (-) = No AMP is scheduled for the allotment.

(8) Trend is the direction of change in range condition over a period of time. Data shown is based on trend studies completed for the San Luis Resource Area Grazing EIS, which was published in 1978. An asterisk (*) indicates no data available; U = Upward trend; S = Static trend; D = Downward trend.

Table D-1
SUMMARY OF LIVESTOCK MANAGEMENT PROGRAM BY ALLOTMENT

| Allotment Identification No. Name | Acres Of Public Land | Number Of Operators In Allotment | Grazing Preference | | | | Class Of Livestock | Season Of Use | Implementation Status | Trend |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Management Category | Active | Voluntary Nonuse/ Suspended | Total | | | | |
| | | | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| 4101 Rio Grande | 2,940 | 2 | C | 92 | 0 | 92 | C | Su | - | * |
| 4102 Lakes | 2,160 | 1 | I | 36 | 36 | 72 | C | Su | NOT | S |
| 4103 Dry Lakes | 3,680 | 1 | I | 103 | 238 | 341 | C | Su | NOT | S |
| 4105 Allotment A | 160 | 1 | C | 6 | 0 | 6 | C | Su | - | * |
| 4107 Foothills | 4,700 | 1 | I | 260 | 0 | 260 | C | Sp,Su,Fa | IMP | U |
| 4108 DOW Pasture | 480 | 1 | C | 15 | 0 | 15 | C | Su | - | * |
| 4109 Phiffer Pasture | 160 | 1 | C | 5 | 0 | 5 | C | Su | - | * |
| 4110 Spring Creek Pasture | 600 | 1 | C | 10 | 0 | 10 | C | Su | - | * |
| 4111 Sand Pasture | 300 | 1 | C | 10 | 0 | 10 | C | Su | - | * |
| 4112 Crow Pasture | 960 | 1 | C | 40 | 122 | 162 | C | Su | - | * |
| 4113 Blanca WHA | 4,680 | 1 | I | 0 | 257 | 257 | C | Sp,Su,Fa | IMU | U |
| 4115 Caldwell Pasture | 200 | 1 | C | 11 | 34 | 45 | C | Su | - | * |
| 4117 #Tobin Creek | 6,128 | 1 | I | 236 | 194 | 430 | H | Sp,Fa,Wi | IMP | U |
| 4120 Pinon | 3,145 | 1 | M | 123 | 83 | 206 | C | Sp,Fa | - | S |
| 4122 Phoneline | 1,444 | 1 | M | 123 | 83 | 206 | C | Su | GS | U |
| 4123 Windmill | 2,481 | 1 | M | 101 | 68 | 169 | C | SU | GS | U |
| 4125 Big East | 1,440 | 1 | C | 40 | 27 | 67 | C | Su | - | * |
| 4126 Sand Dunes | 400 | 1 | C | 15 | 0 | 15 | C | Su | - | * |
| 4201 #McMahon | 15,518 | 1 | I | 1,286 | 23 | 1,309 | S | Sp,Fa,Wi | IMP | S |
| 4202 Alamosa River | 760 | 1 | C | 40 | 0 | 40 | S | Fa | - | * |
| 4206 #Poso Creek | 510 | 1 | C | 38 | 0 | 38 | S | Fa,Wi | - | S |
| 4207 Capulin | 3,992 | 1 | I | 376 | 450 | 826 | S | Fa,Wi | NOT | S |
| 4209 Arroyo | 1,920 | 1 | I | 178 | 0 | 178 | S | Fa,Wi | NOT | S |
| 4210 #Crossroads | 4,158 | 1 | I | 366 | 114 | 490 | S | Fa,Wi | NOT | S |
| 4212 Ciscom Flat | 3,680 | 1 | I | 191 | 138 | 329 | C | Su | IMP | U |
| 4213 Garambuyo | 7,698 | 1 | I | 582 | 113 | 695 | S | Sp,Fa,Wi | NOT | S |
| 4214 #Trujillo | 5,168 | 1 | I | 425 | 116 | 541 | S | Fa,Wi | NOT | S |
| 4216 Jadero Flat | 5,200 | 1 | I | 322 | 53 | 375 | S | Wi | IMP | U |
| 4219 Romero Canyon | 1,761 | 1 | I | 125 | 214 | 339 | C | Su | IMP | S |
| 4220 RaJadero Canyon | 6,533 | 3 | I | 617 | 174 | 791 | C&S | Su,Fa | NOT | S |
| 4222 Little Mogotes | 13,803 | 4 | I | 1,202 | 102 | 1,304 | C&S | Sp,Fa,Wi | IMP | U |
| 4224 Poso | 5,144 | 1 | I | 200 | 115 | 315 | C | Fa,Wi | IMP | U |
| 4225 Mogote Flat | 1,977 | 1 | I | 206 | 0 | 206 | C | Su | IMP | S |
| 4226 Grande-Mogote | 5,232 | 1 | I | 522 | 269 | 791 | C | Sp,Fa | IMP | S |
| 4227 La Jara Creek | 600 | 1 | I | 31 | 19 | 50 | C | Su | IMP | U |
| 4229 #Los Mogotes | 5,721 | 2 | I | 397 | 265 | 662 | C | Su | IMP | U |
| 4230 Fox Creek | 381 | 1 | C | 27 | 5 | 32 | S | Sp | - | * |
| 4232 Las Mesitas | 87 | 1 | C | 7 | 0 | 7 | C | Sp,Fa | - | * |
| 4234 Bighorn Creek | 750 | 1 | I | 90 | 20 | 110 | C | Fa | IMP | * |
| 4235 Railroad | 3,841 | 1 | I | 172 | 296 | 468 | S | Fa,Wi | IMP | S |

## Table D-1 (Continued)

| Allotment Identification No. Name | Acres Of Public Land | Number Of Operators In Allotment | Grazing Preference | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Management Category | Active | Voluntary Nonuse/ Suspended | Total | Class Of Livestock | Season Of Use | Implementation Status | Trend |
| | | | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| 4237 Twin Lakes Ind. 1 | 240 | 1 | C | 11 | 0 | 11 | C | Sp,Fa | - | * |
| 4238 Twin Lakes Ind. 2 | 528 | 1 | C | 37 | 7 | 44 | C | Sp,Fa | - | * |
| 4239 San Antonio | 5,200 | 1 | I | 222 | 107 | 329 | C | Sp,Fa | IMP | S |
| 4240 Alta Lake | 5,192 | 1 | I | 288 | 356 | 644 | C | Fa,Wi | IMP | S |
| 4241 #South Hills | 1,323 | 1 | C | 65 | 11 | 76 | S | Fa | - | * |
| 4242 Twin Lakes | 7,562 | 1 | I | 616 | 242 | 858 | C | Wi | IMP | U |
| 4243 River | 2,560 | 1 | C | 200 | 190 | 390 | C | Fa,Wi | - | * |
| 4244 South Valley | 1,945 | 1 | C | 136 | 157 | 293 | C | Fa | - | * |
| 4245 Pinon | 5,440 | 1 | I | 292 | 107 | 399 | C | Sp,Fa | IMP | S |
| 4247 #Braiden-North | 640 | 1 | C | 40 | 80 | 120 | C | Fa | - | * |
| 4248 Kiowa Hill | 4,302 | 1 | I | 209 | 177 | 386 | C | Sp,Fa,Wi | IMP | U |
| 4249 Pinon Hills | 9,272 | 1 | I | 500 | 557 | 1,057 | S | Fa,Wi | NOT | S |
| 4250 Eight Mile | 5,640 | 1 | I | 212 | 108 | 320 | C | Sp,Wi | IMP | S |
| 4251 Mesa Common | 4,976 | 1 | I | 263 | 174 | 437 | S | Fa,Wi | IMP | U |
| 4252 San Luis Hills | 2,542 | 1 | I | 110 | 0 | 110 | S | Fa,Wi | IMP | U |
| 4253 Flat Top | 7,440 | 2 | I | 348 | 78 | 426 | S | Fa,Wi | IMP | U |
| 4255 #La Sauses | 3,280 | 1 | I | 139 | 156 | 295 | C | Sp,Su | NOT | S |
| 4256 East Bend | 2,760 | 1 | I | 149 | 0 | 149 | S | Sp,Wi | IMP | S |
| 4257 Braiden-South | 320 | 1 | C | 20 | 40 | 60 | C | Fa | - | * |
| 4258 Del Rancho | 200 | 1 | C | 11 | 0 | 11 | C | Sa | - | * |
| 4259 Chicago Bogs | 320 | 1 | C | 55 | 28 | 83 | C | Su | - | * |
| 4303 Schrader Creek | 640 | 1 | C | 42 | 11 | 53 | C | Sp | GS | * |
| 4304 Bowen | 480 | 1 | I | 21 | 65 | 86 | C | Fa | IMP | U |
| 4305 Sanderson | 510 | 1 | I | 32 | 0 | 32 | C | Sp | IMP | U |
| 4307 Alder Creek | 275 | 1 | I | 20 | 20 | 40 | C | Sp,Fa | IMP | S |
| 4309 County Line | 200 | 1 | C | 18 | 0 | 18 | S | Fa,Wi | - | * |
| 4310 #Indian Head | 400 | 1 | C | 18 | 0 | 18 | S | Fa,Wi | - | * |
| 4312 Bachelor Lake | 320 | 1 | C | 24 | 16 | 40 | C | Su | - | * |
| 4315 Dry Gulch | 690 | 1 | I | 79 | 0 | 79 | C | Su | NOT | S |
| 4316 #San Isabel | 820 | 1 | C | 60 | 0 | 60 | C | Su | - | * |
| 4317 Rito Alto | 740 | 1 | C | 45 | 0 | 45 | C | Su | - | * |
| 4319 Alamosa Prairie | 320 | 1 | C | 16 | 0 | 16 | S | Sp,Fa | - | * |
| 4320 Ox Bow | 82 | 1 | C | 8 | 45 | 53 | C | Su | - | * |
| 4401 Limekiln | 5,050 | 1 | I | 373 | 17 | 390 | S | Fa,Wi | IMP | U |
| 4402 Pup Peak | 5,002 | 2 | I | 406 | 0 | 406 | S | Fa,Wi | IMP | U |
| 4403 Nicomodes | 2,240 | 1 | I | 200 | 0 | 200 | S | Fa | NOT | S |
| 4404 Refuge | 1,080 | 1 | I | 92 | 0 | 92 | S | Sp | NOT | S |
| 4405 Raton Creek | 3,940 | 1 | I | 274 | 112 | 386 | C | Fa | NOT | S |
| 4406 Rock Creek | 12,171 | 1 | I | 1,147 | 1,853 | 3,000 | S | Fa,Wi | NOT | S |
| 4410 #Triangle | 3,715 | 1 | I | 315 | 264 | 579 | S | Sp,Fa,Wi | IMP | U |
| 4411 #Gato-Hutchinson | 1,960 | 1 | I | 228 | 92 | 320 | S | Sp,Fa,Wi | IMP | U |
| 4412 #Greenie Mountain | 7,954 | 1 | I | 588 | 132 | 720 | S | Sp,Fa,Wi | NOT | S |
| 4501 #Poncha Pass-West | 1,925 | 1 | I | 205 | 532 | 737 | C | Su | IMP | S |
| 4502 West Clover Creek | 170 | 1 | I | 45 | 30 | 75 | C | Su | IMP | U |

## Table D-1 (Continued)

| Allotment Identification No. Name | Acres Of Public Land | Number Of Operators In Allotment | Grazing Preference | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Management Category | Active | Voluntary Nonuse/ Suspended | Total | Class Of Livestock | Season Of Use | Implementation Status | Trend |
| | | | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| 4503 Clover Creek | 82 | 1 | C | 7 | 0 | 7 | C | Su | - | * |
| 4504 Round Hill | 267 | 1 | C | 12 | 0 | 12 | C | Su | - | * |
| 4505 #Poncha Pass East | 1,550 | 1 | I | 286 | 143 | 429 | C | Su | IMP | U |
| 4506 East Side | 10,381 | 1 | I | 1,213 | 0 | 1,213 | C | Su | IMP | U |
| 4507 San Luis Creek #1 | 10 | 1 | C | 6 | 0 | 6 | C | Fa | - | * |
| 4508 Alder Creek | 279 | 1 | C | 58 | 0 | 58 | C | Su | - | * |
| 4509 Spring Creek | 1,070 | 1 | C | 74 | 0 | - | - | Su | - | * |
| 4510 Turquoise Gulch | 3,806 | 1 | I | 559 | 0 | 559 | C | Sp,Su | IMP | S |
| 4511 San Luis Creek #2 | 155 | 1 | C | 13 | 0 | 13 | C | Fa | - | * |
| 4513 #Kelly Creek | 6,699 | 2 | I | 543 | 68 | 611 | C | Su | IMP | S |
| 4514 Kerber Creek | 4,500 | 1 | I | 274 | 421 | 695 | C | Su | NOT | S |
| 4515 North Kerber Creek | 170 | 1 | C | 18 | 0 | 18 | C | Su | - | * |
| 4516 South Kerber Creek | 170 | 1 | C | 12 | 0 | 12 | C | Su | - | * |
| 4517 Noland Gulch | 7,650 | 1 | I | 541 | 31 | 572 | C | Su | IMP | U |
| 4518 Nye | 1,463 | 1 | C | 76 | 149 | 225 | C | Su | - | * |
| 4519 #West of San Luis Crk | 1,584 | 1 | I | 159 | 36 | 195 | C | Su | NOT | S |
| 4520 Silver Crk F. R. | 80 | 1 | C | 8 | 0 | 8 | C | Su | - | * |
| 4521 Piney Creek | 2,660 | 1 | I | 180 | 0 | 180 | C | Su | NOT | S |
| 4522 Steel Canyon | 4,472 | 1 | I | 203 | 97 | 300 | C | Su | NOT | U |
| 4523 East of San Luis Crk | 1,220 | 1 | I | 104 | 31 | 135 | C | Su | NOT | S |
| 4524 Mirage | 2,275 | 1 | I | 191 | 234 | 425 | C | Su | NOT | S |
| 4527 Valley View Hot Spng | 4,927 | 2 | I | 428 | 108 | 536 | C | Su | IMP | U |
| 4530 Cotton Creek | 3,880 | 1 | I | 313 | 0 | 313 | C | Su | IMP | S |
| 4531 Stonehouse | 3,869 | 1 | I | 390 | 135 | 525 | C | Su | NOT | S |
| 4532 Crow | 2,143 | 1 | I | 203 | 0 | 203 | C | Su | NOT | S |
| 4533 Copper Butte | 4,830 | 1 | I | 445 | 0 | 445 | C | Su | NOT | S |
| 4534 McIntyre Gulch | 4,408 | 1 | I | 132 | 348 | 480 | C | Fa | IMP | U |
| 4535 Cottonwood | 3,230 | 1 | I | 217 | 512 | 729 | C | Fa | IMP | U |
| 4536 Findley Gulch | 11,345 | 2 | I | 486 | 507 | 993 | C | Su | IMP | U |
| 4540 Dry Gulch | 4,261 | 1 | I | 303 | 0 | 303 | C | Su | NOT | S |
| 4541 Poison Gulch | 12,898 | 1 | I | 734 | 177 | 911 | C | Su | NOT | S |
| 4542 Tuttle Creek | 1,290 | 1 | I | 48 | 150 | 198 | C | Su | IMP | U |
| 4543 Middle Creek | 928 | 1 | I | 24 | 37 | 61 | C | Su | NOT | S |
| 4544 Indian Creek | 168 | 1 | C | 11 | 0 | 11 | C | Su | - | * |
| 4545 Cross Creek | 6,637 | 2 | I | 300 | 371 | 671 | C | Su,Fa | IMP | U |
| 4546 Trickle Mountain | 19,279 | 1 | I | 776 | 423 | 1,200 | C | Su | NOT | S |
| 4547 Sheep Creek | 2,031 | 1 | I | 202 | 106 | 308 | C | Fa | IMP | S |
| 4548 Taylor Canyon | 2,902 | 1 | I | 245 | 125 | 370 | C | Fa | IMP | U |
| 4549 Meadow Fenced F.R. | 9 | 1 | C | 25 | 0 | 25 | C | Su | - | * |
| 4550 Rabbit Canyon | 3,865 | 1 | I | 290 | 0 | 290 | C | Fa | IMP | S |
| 4551 Saguache Park | 1,920 | 1 | I | 119 | 0 | 119 | C | Su | IMP | S |
| 4552 Hat Springs | 5,069 | 1 | I | 327 | 0 | 327 | C | Fa | IMP | U |
| 4553 Flickinger Inc. F.R. | 240 | 1 | C | 23 | 0 | 23 | C | Su | - | * |
| 4554 Rob Ranch | 1,537 | 1 | I | 113 | 0 | 113 | C | Fa | NOT | S |

Table D-1 (Continued)

| Allotment Identification No. Name | Acres Of Public Land | Number Of Operators In Allotment | Grazing Preference | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Management Category | Active | Voluntary Nonuse/ Suspended | Total | Class Of Livestock | Season Of Use | Implementation Status | Trend |
| | | | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| 4555 Mesa | 396 | 1 | C | 20 | 0 | 20 | C | Fa | - | * |
| 4556 #Mill Creek | 694 | 1 | C | 45 | 0 | 45 | C | Fa | - | * |
| 4557 Hoagland Hill | 3,633 | 1 | I | 228 | 0 | 228 | C | Su | IMP | S |
| 4558 East Hoagland Hill | 1,459 | 1 | C | 76 | 43 | 119 | H | Sp,Su,Fa | NOT | S |
| 4559 Ward Fenced Tracts | 22 | 1 | C | 18 | 0 | 18 | C | Su | - | * |
| 4560 #Laughlin Gulch | 2,349 | 1 | I | 150 | 0 | 150 | C | Su | NOT | S |
| 4561 Higgins Springs | 753 | 1 | C | 49 | 0 | 49 | C | Su | - | * |
| 4562 Mitchell | 779 | 1 | I | 50 | 109 | 159 | C | Fa | IMP | U |
| 4563 West Tracy Ridge | 925 | 1 | I | 42 | 36 | 78 | C | Su,Fa | IMP | U |
| 4564 Tracy Ridge | 893 | 1 | C | 45 | 0 | 45 | C | Su | - | * |
| 4565 Tracy Canyon | 1,596 | 1 | I | 99 | 34 | 133 | C | Su | NOT | S |
| 4566 Tracy Common | 27,524 | 8 | I | 2,841 | 943 | 3,784 | C | Su,Fa | NOT | S |
| 4567 Biedell | 2,422 | 1 | I | 172 | 0 | 172 | C | Su | IMP | U |
| 4568 #East Carnero Creek | 10,796 | 1 | I | 302 | 329 | 631 | C | Su,Fa | NOT | S |
| 4569 Upper Coolbroth | 1,780 | 1 | I | 75 | 44 | 119 | C | Su | IMP | S |
| 4570 Lower Coolbroth | 625 | 1 | I | 29 | 12 | 41 | C | Su | IMP | S |
| 4572 La Garita | 1,082 | 1 | I | 73 | 71 | 144 | S | Fa,Wi | NOT | S |
| 4574 Rio Grande Canal | 4,360 | 1 | I | 225 | 75 | 300 | S | Fa,Wi | IMP | U |
| 4577 #Hellgate | 900 | 1 | C | 17 | 0 | 17 | C | Su | - | * |

# Adjustments in allotment boundaries because of ADP recalculations and/or modifications in seasons of use from San Luis Grazing EIS.

# APPENDIX E

# RIO GRANDE RIVER STUDY REPORT

# APPENDIX E

# RIO GRANDE RIVER STUDY REPORT

## INTRODUCTION

This study report describes the purpose, methods, personnel involved, and timing of an assessment of 41.5 miles of the Rio Grande River located in the south-central portion of the San Luis Planning Area (Map E-1). It also is the public record of this river study of the Rio Grande River for potential designation as a segment of the national Wild and Scenic River System. The study was conducted between October of 1987 and April 1988. This report includes basic physical and biological description of the river corridor, analysis of the potential for meeting the wild and scenic criteria, classification of various segments of the river, and an evaluation/recommendation by the study team.

### Purpose of the River Study Report

This report will identify which portions of the Rio Grande River segment from the Alamosa Wildlife Refuge to the Colorado/New Mexico border should be nominated for inclusion in the National Wild and Scenic River System (NWSRS). The initial scoping process in the San Luis Resource Management Plan (SLRMP) indicated that this segment of the Rio Grande River has some of the qualities that would warrant its inclusion in the NWSRS. The area has also been identified as a potential special recreation management area (SRMA), an area of critical environmental concern (ACEC), and as having some special cultural characteristics. The initial scoping and identification were completed as part of the SLRMP planning process and are documented in the management situation analysis (MSA).

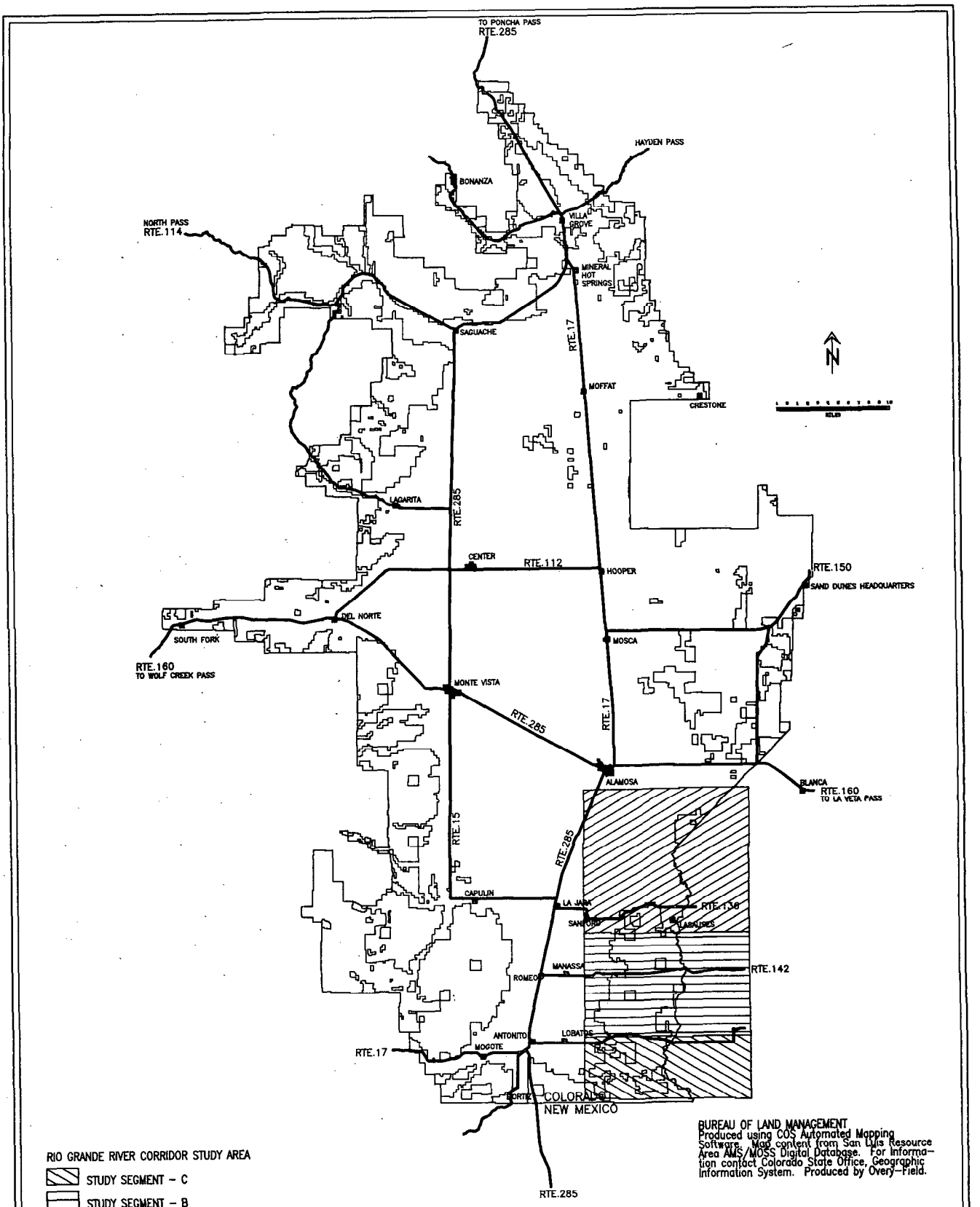
In addition to the above rationale for a study report, the lower segment (8.8 miles in Colorado) of the Rio Grande River evaluated during this study was also considered eligible for classification when the New Mexico portion of the river was designated. It is not known why this 8.8-mile portion in Colorado was dropped from Congressional legislation; however, there is still the question of whether or not it is eligible. The planning process is an appropriate tool to determine if the Colorado segment meets the criteria and what management is appropriate for the resources present. Impacts are included in the draft RMP/EIS and are not addressed in this study report.

### Methods Used for the River Study Report

A study group was formed to examine the river as part of the current RMP process and determine its eligibility for wild, scenic, or recreational river designation. The results comprise this appendix.

The process began with meetings and consultations with the Bureau of Land Management (BLM) Taos Resource Area Staff, who manage the 67 miles of the Rio Grande River Corridor in New Mexico. Other BLM, as well as National Park Service (NPS), personnel were also consulted to obtain information and insight for the assessment. Additional steps included: (1) a group tour of the area; (2) a group work session for interaction in the initial analysis; and (3) a review of the draft appendix.

The recreation portion of the SLRMP would include decisions regarding the management of resources within the river corridor and an assessment of the suitability of this segment as an addition to the Wild and Scenic River System. If the segment is not recommended, there would still be a need to establish management direction for the river corridor. Each of the draft RMP/EIS alternatives address a different prescription to manage the resources within the corridor.




FOR A BETTER PERSPECTIVE OF BLM OWNERSHIP, SEE THE FOLDOUT MAP AT THE BACK OF THE PLAN.

## Map E-1
## Rio Grande River Corridor Study Area

## Study Report Group Members

The following people assisted in this assessment process:

| | |
|---|---|
| John Wilson, DO Recreation Program Leader | Group Leader; co-author of the draft river report |
| Bill Miller, RA Recreation Program Leader | Lands ownership, mapping and tour coordinator, and co-author of the draft river report |
| Stan Specht, CSO Planning Coordinator (RMP Liaison for CSO) | VRM, CSO liaison, work session recorder; assist with writeup |
| Dave Taliaferro, Project Leader (RMP Team Leader) | Assessment group organizer, RMP liaison, DO liaison, recreation work; co-author of the draft report |
| Ken Goodrow, AO P&E Coordinator | Area office liaison; other resources writeup |
| Dennis Zachman, Area Manager (Project Manager) | Management direction |
| Ade Neisius, ADM, Resources | Management direction, DO liaison, quality control |

*NOTE*: Many other BLM Colorado State Office and New Mexico State Office, BLM Canon City District Office and Albuquerque District Office, BLM San Luis Resource Area Office, and Taos Resource Area Office staff were utilized during the process to assist in gathering resource information.

## Study Report Schedule

October and November 1987—Collect examples of other assessments and information on legal requirements of assessment for RMP.

January 1988—Organize process of assessment, select group, and make needed assignments.

February 1988—Complete corridor tour and river assessment, write draft and distribute for review. (The SLRA tour of the river corridor and the group work session was February 23 through 25.)

March 1988—Review draft, integrate into RMP alternatives, prepare final appendix.

*NOTE*: Based on guidelines outlined in BLM Instruction Memorandum 87-615 the assessment was designed to continue as a regular part of the RMP process. Also, dates of public review as well as the decision itself will be the same as the Record of Decision (ROD) for the RMP.

# DESCRIPTION OF THE RIVER CORRIDOR

## Location

The segment of the Rio Grande River included in this study begins where the river enters the Alamosa National Wildlife Refuge and extends south to the New Mexico State line. See Map E-1. The legal descriptions shown include this area.

New Mexico Principal Meridian

T. 32 N., R. 11 E. Secs. 4, 9, 10, 13, 14, 15, 24
T. 33 N., R. 11 E. Secs. 3, 10, 14, 22, 27, 28, 33
T. 34 N., R. 11 E. Secs. 2, 11, 14, 23, 26, 35
T. 35 N., R. 11 E. Secs. 1, 2, 12, 13, 14, 23, 26, 35
T. 36 N., R. 11 E. Secs. 4, 5, 9, 15, 16, 22, 27, 34, 35
T. 37 N., R. 11 E. Secs. 19, 20, 28, 29, 33

The total length of the river section included in the study is approximately 41.5 miles. This was divided into three segments (A, B, and C) because of differing physical characteristics. A description of each segment is included in the Physical Description section of this report.

Segment A (20.4 miles) begins where the river enters the Alamosa Wildlife Refuge and extends to the Lasauses Cemetery. Segment B (12.3 miles) continues from the

Lasauses Cemetery to one-quarter mile north of Lobatos Bridge. Segment C (8.8 miles) continues from there to the New Mexico State line.

## Physical Description

The first 7 miles of Segment A are in the Alamosa National Wildlife Refuge. The adjacent private and county land is composed mostly of flat meadows with some willow and cottonwood trees growing along the streambanks. Hansen Bluff, which parallels the river through the refuge, is of significant cultural value since it was an important overlook for previous inhabitants in the area. The bluff also has paleontological significance as it contains a very large number of special vertebrate and invertebrate fossils.

South of the refuge, the river flows through similar terrain and vegetation until it reaches the Lasauses Cemetery. Only small, scattered parcels of BLM land border the river in this section. The recently erected County Bridge across the Rio Grande River north of Lasauses is on BLM land. A parking lot constructed along the east bank of the river adjacent to the bridge provides public access for rafting, canoeing, hunting, fishing, and other recreational activities.

The river contains several species of fish including northern pike and trout, and many species of waterfowl are evident along the river. Raptors, including bald and golden eagles, are also present because of the abundance of fish, waterfowl, and other prey. Scenic vistas from the river include the Brown Hills (east of river), San Luis Hills (proposed ACEC), Flat Top (proposed ACEC), and Pinon Hills WSA. Mt. Blanca and the rugged Sangre de Cristo and San Juan mountains can be seen in the distance.

Along the first 6 miles of Segment B, a large unbroken tract of BLM land borders the west side of the river. However, the remainder of the western and eastern side of the river is bordered by private land. There is a significant amount of county-owned land along the eastern side of this segment. Except for a narrow riparian zone extending along both sides of the river, the land is semidesert with sparse vegetation. Vertical rock walls of up to 100 feet in height occur in several places along the river creating an enclosed landscape. The remainder of the segment is more open and offers opportunities for expansive unobstructed views.

Overall, this segment contains a variety of scenic, unique settings and includes numerous opportunities for solitude. The state bridge on Highway 142 and several subdivision roads on private lands along the eastern side of the river are the only large manmade intrusions. All species of fish and wildlife in Segment A are also present in Segment B, and immediate and distant scenic views are also similar to those from Segment A. The area does contain some noxious weed species in the riparian zone.

Segment C extends to the New Mexico State line. The first 2 miles (Figure E-1) along the western side of the river are currently private land. However, the entire western side would become BLM land if a pending land exchange is finalized. The eastern side, although a private subdivision, is the least developed segment of the study area. This side of the river in Segment C is also owned by the county, including sizable amounts of the subdivision.

Vertical rock walls rise from about 25 feet high at the beginning of the segment to approximately 200 feet at the state line. The river is accessible to vehicles in several places along the first 2 miles of this segment. The other 6.8 miles (Figures E-2, E-3, and E-4), however, are inaccessible because of the sheer rock walls, and the riparian zone becomes very narrow and confined by the cliffs.

Vegetation, fish, and wildlife species are similar to those in Segments A and B; however, wildlife resources in this 6.8-mile segment are extremely rich and very fragile. A minimum of 35 to 40 raptor nesting sites have been inventoried including 11 prairie falcon eyries and 4 golden eagle eyries, some of which indicate 200 years of historical use. Several nesting pairs of Canada geese also reside in this segment along with numerous other species of waterfowl. This segment is also the beginning of a narrow migration corridor used by a large number of waterfowl and passerine birds in both the spring and fall.

This portion of the river contains none of the expansive vistas of the first two segments. Instead, the vertical rock walls create an enclosed setting and help convey an intense feeling of remoteness. A point of interest in the upper portion of this segment is the Lobatos Bridge, which, because of its old historical style structure, has been nominated for the National Register of Historical Places.

The Rio Grande River is a free-flowing, high water quality river through the entire study area. Water level peaks during spring runoff with the highest level in May and June and lower flows during the remainder of the year. The gradient is gradual with no large rapids nor falls and the width ranges from 20 to 75 feet.

## Existing Uses of the Study Area

Existing uses along the river in the study area include grazing, fishing, floatboating, waterfowl hunting, and scenery viewing. Power withdrawals with several overlapping public water reserves occur on BLM lands along the western side of the river. At least 15 to 20 roads access the river in the study area. From the Lobatos Bridge south, commercial rafting is regulated by the BLM Taos Resource Area, Taos, New Mexico. BLM obtained permission from a private landowner to place a sign and registration box at the launch site adjacent to Lobatos Bridge.

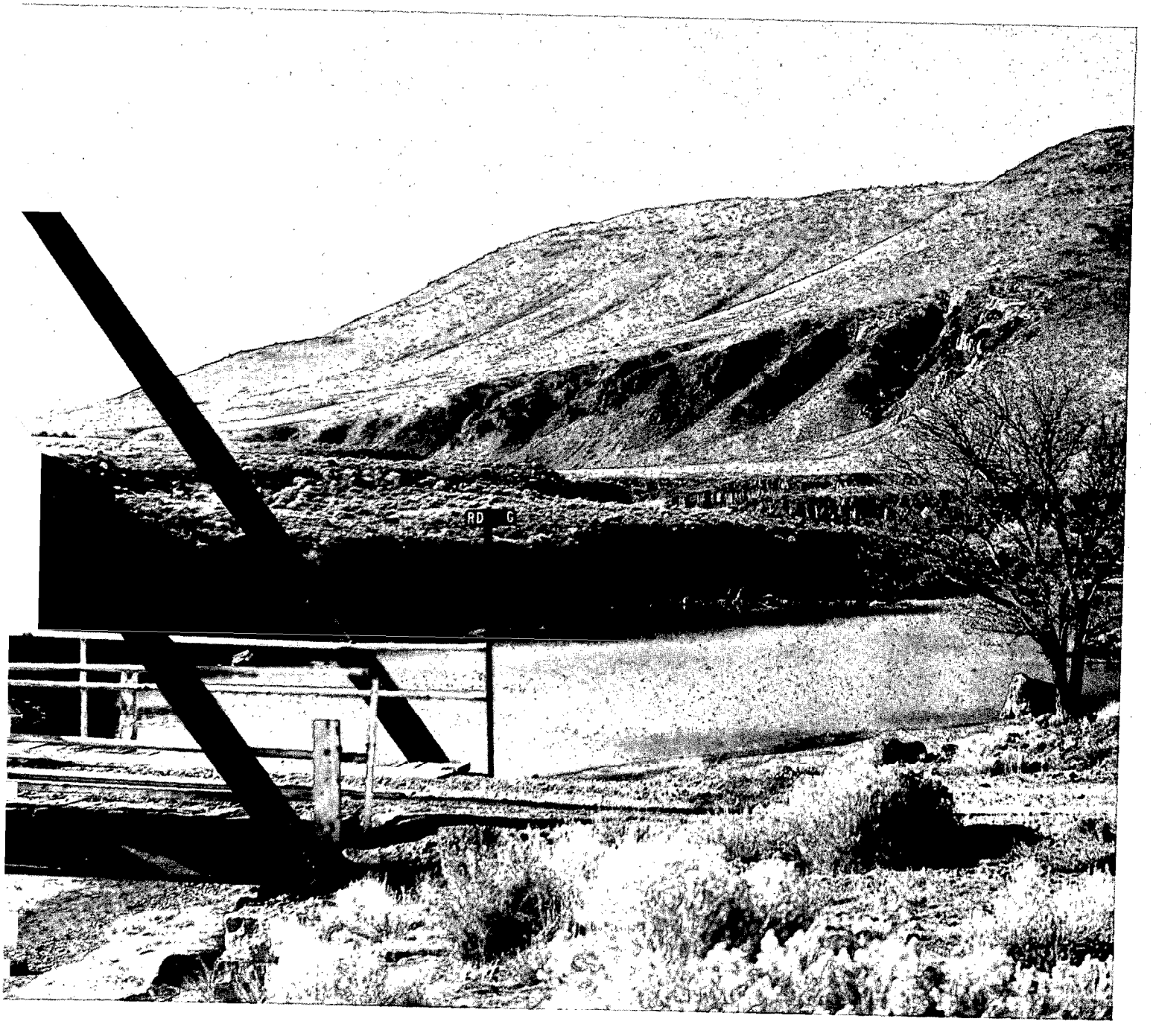


Figure E-1

2-mile segment of Rio Grande River
recommended for Recreation designation.

**APPENDIX E**

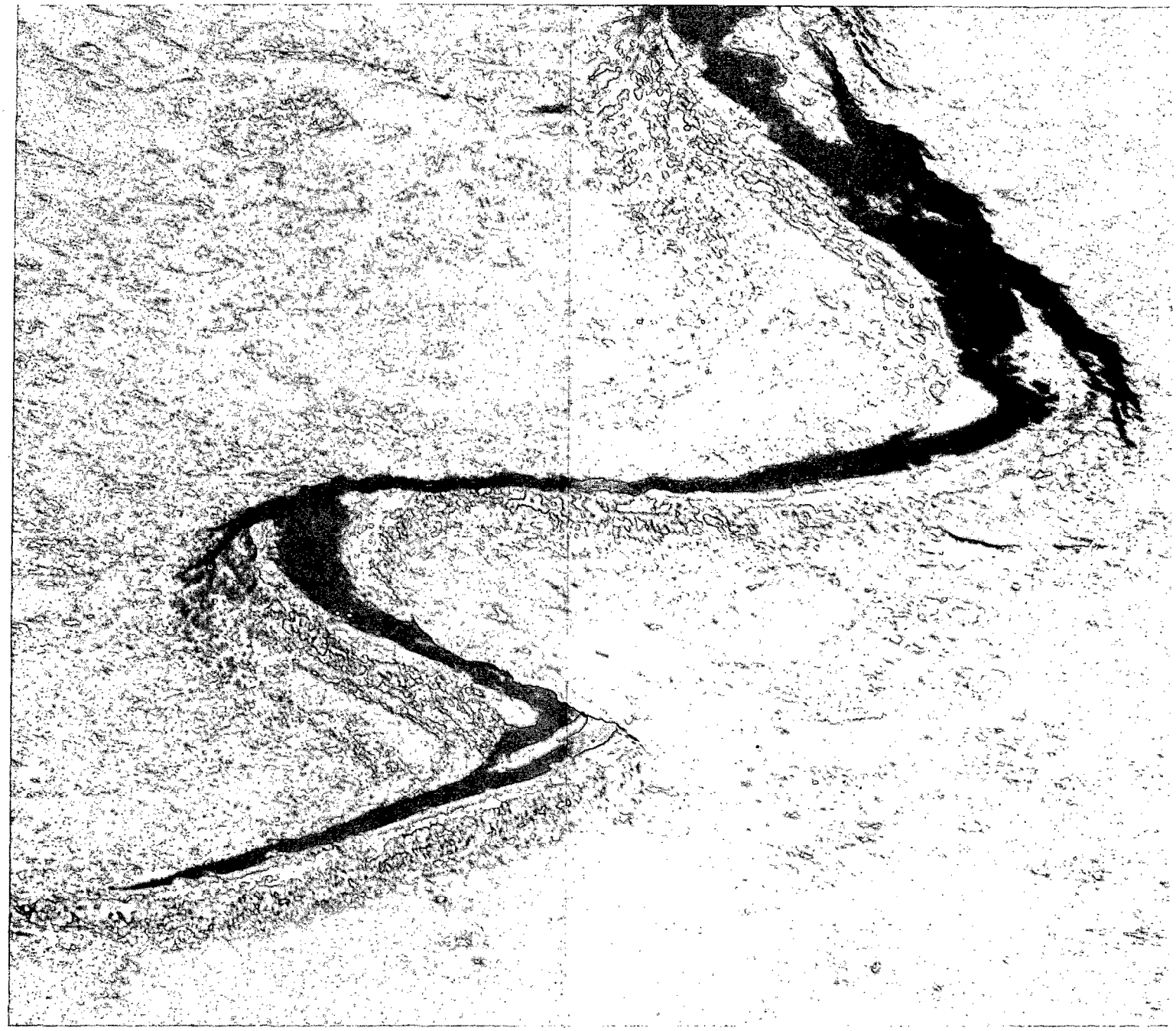


Figure E-2

Aerial view of portion of 6.8- mile segment recommended for Wild designation.

Figure E-3

Close-up view of Segment C showing
Box Canyon with enclosed landscape qualities.

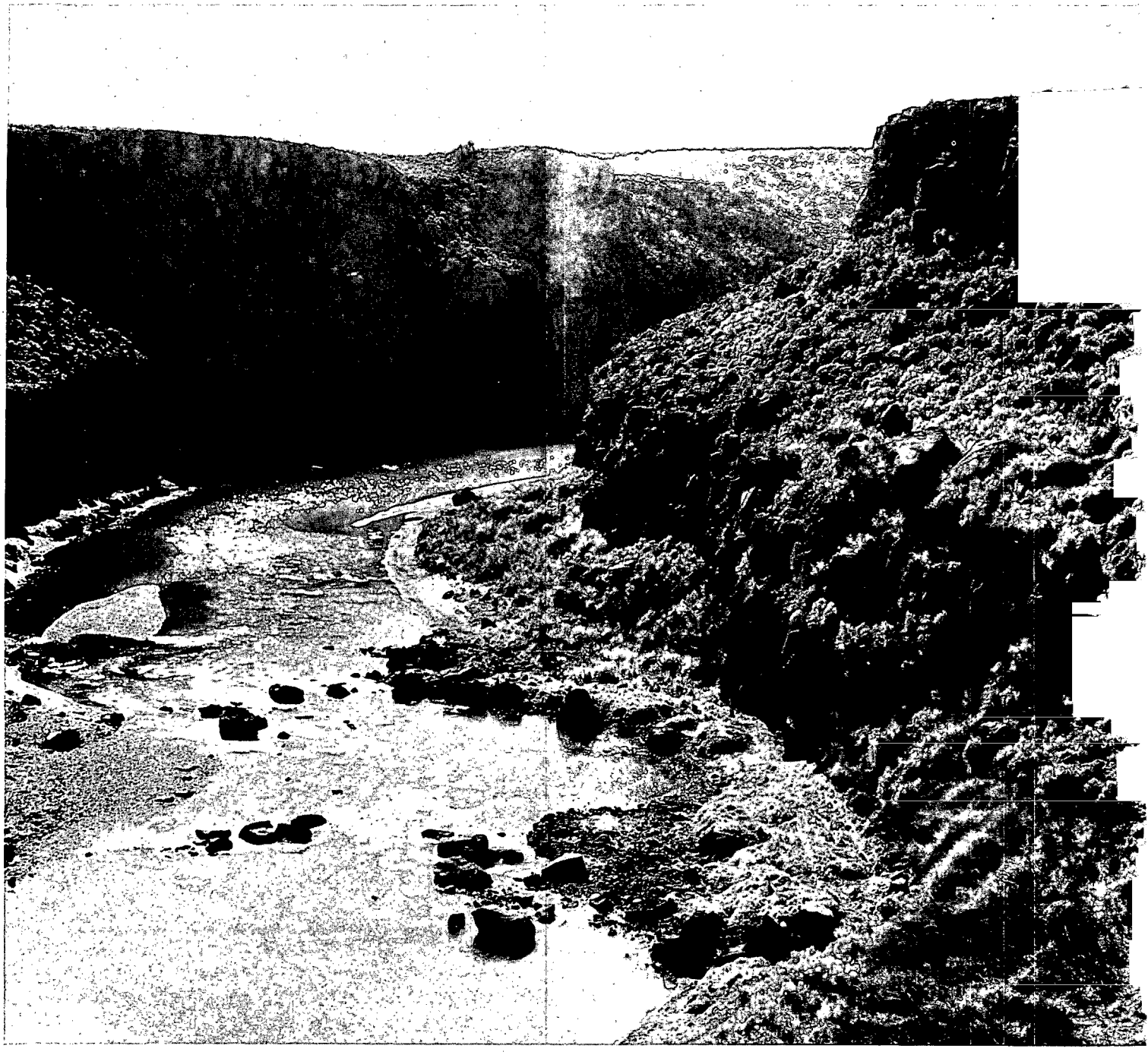


Figure E-4

View of Segment C showing riparian areas
and rock-strewn riverbank

The study area is significant in that it is largely remote and sparsely populated, with few large manmade intrusions to detract from a natural, serene outdoor experience.

## Constraints on the Study Area

The power withdrawals and public water reserves are limiting factors to some types of development along the river because nothing can be done to affect the purpose of the withdrawal unless that withdrawal is recommended for termination in the RMP planning process. Mineral development could conflict with the public water reserves or the wild and scenic designation. The subdivision on the eastern side of the river could also cause potential problems to the wild and scenic designation.

Conflicts exist concerning the boundary between BLM lands and the adjacent Sangre de Cristo land grant. If the boundary is determined to be the cliff top along the east side of the river, as the old land records state, it would benefit the wild and scenic designation as the entire canyon would be in public ownership. If the potential 345 kV powerline from Taos, New Mexico, to Center, Colorado, were ever constructed, it would be a detraction to the wild and scenic river designation.

As stated previously, the Rio Grande River below the Colorado State line already has wild and scenic status. An extension of this designation to the Lobatos Bridge would improve management continuity as both segments have similar scenic, recreational, and ecological qualities.

# IDENTIFY BY CRITERIA/ ALTERNATIVE ACTIONS TO BE USED

## Criteria for National System Analysis

The draft guidance (WO IM 87-615) on identification and evaluation of potential additions to the National Wild and Scenic River System was used in the study of this segment of river, which is listed in the January 1982 *Nationwide Rivers Inventory*. To be eligible for inclusion, a river must be free flowing and, with its adjacent land area, must possess one or more outstandingly remarkable values (scenic, recreational, geologic, fish and wildlife, historic, cultural, or other). The river is divided into segments for classification. Segments are determined by obvious changes in land status or ownership, changes in river character, changes in amount of development, or presence of important resource values.

After a river or segment is determined to be eligible, the *Wild and Scenic River Act* specifies three classification categories: (1) wild river areas, (2) scenic river areas, (3) or recreational river areas. The basis for classification is the degree of naturalness. The most natural rivers will be classified wild; those somewhat less natural, scenic; and those least natural, recreational. The determination of suitability provides the basis to recommend designation or nondesignation of the river. If a river segment flowing through public lands would be a viable addition to the National System without the remainder of the river, the RMP should proceed to assess the suitability of the segment.

## Alternative Actions for River Corridor Management

The following alternative actions are described so they may be evaluated during the RMP process.

*Existing Management Alternative*: At the present time the Taos Resource Area administers a minimal level of management on the segment from Lobatos Bridge to the Colorado/New Mexico State line. Management consists of maintaining a sign-in board at the launch site (Lobatos Bridge), counting cars, and making spot checks to estimate visitor use.

An informal agreement between the the Taos and San Luis Resource Areas regarding management of the area has been in place for several years. An official interim management agreement is currently being drafted.

Present use of public lands along the river for floatboating, grazing, hunting, fishing, and other recreational use would continue. There is a recognized need to acquire easements or land on the eastern side of the river to protect and improve riparian values and grazing management opportunities. The San Luis Resource Area would continue efforts to acquire lands along the western side of Segments B and C (Bagwell and Quinlan exchanges). It is also considered desirable to acquire approximately 75 acres north of the bridge for improved and expanded river access.

*Natural Resource Enhancement Alternative*: All 8.8 miles of Segment C would be recommended for designation as an addition to the National Wild and Scenic River System. The portion of Segment C (6.8 miles) from the New Mexico State line north to within one-quarter mile south of the Lobatos Bridge would be recommended for classification as "wild" to be consistent with the river designation in New Mexico. The remaining 2 miles in Segment C would be

recommended for "recreational" classification. Proposed management for Segment B would be as a special recreation management area (SRMA) with emphasis on protecting wildlife values. This segment extends from the northern edge of the proposed wild and scenic river (W&SR) segment northward for 28.4 miles to the County Bridge. Acquisition of scenic or protective easements to protect wildlife, riparian, vegetation, and recreation values would be a management objective on the eastern side of this segment of the river.

*Production Resource Enhancement Alternative*: In this alternative the Rio Grande River would be managed as an SRMA from the state line north for 21.1 miles to the northern extent of public land (Segment C and a portion of Segment B) near the Lasauses Cemetery.

Management emphasis would be on intensive use for recreation activities such as floatboating, fishing, hunting, and sightseeing.

*Preferred Alternative*: It would be recommended to Congress that out of 41.5 miles of river studied, all 8.8 miles of Segment C be designated as an addition to the National Wild and Scenic River System. The 6.8-mile portion of Segment C from the New Mexico State line north to the mouth of the Rio Grande River Gorge (approximately one-quarter mile south of Lobatos Bridge) would be recommended for classification as "wild" as an extension of the existing system in New Mexico. The remaining 2 miles of Segment C would be recommended for classification as "recreational." Revocation of all water powersite and water storage withdrawals on Segment C would be recommended.

An SRMA would be established for the entire Segment B with emphasis on intensive development for recreation opportunities such as floatboating, fishing, hunting, and sightseeing. Public access and use improvements would be made.

No BLM initiated development would occur in Segment A, but the public access and river recreation site at the County Bridge would be maintained.

# ANALYSIS AND EVALUATION

## Analysis

The study team met in Alamosa February 23 through 25, 1988, to determine eligibility, classification, and suitability. A field trip was conducted on February 24 so the team could view and assess the study segments in Colorado, as well as the existing wild and scenic river portion in New Mexico. Mel Nail, Manager of the U. S. Fish and Wildlife Service (USFWS) Alamosa Refuge was contacted on February 29, 1988, to discuss the desirability of including the refuge segment of the river in this study. As discussed with the manager of the Alamosa Refuge, a recreational designation of the river would not be appropriate nor compatible with the wildlife objective of the refuge, and the segment of river flowing through the refuge is not considered in this study.

### Segment C

The southernmost 6.8 miles of Segment C meet the criteria for wild river classification. It is free of impoundments, is essentially primitive (little or no evidence of human activity), has very light to nonexistent livestock use, and is only accessible by boat or trail. Also, preliminary knowledge of water quality shows ability to meet classification standards as evidenced by fish propagation and normal wildlife use.

The same values determined to be significant in designation of the New Mexico segment as wild are present in this portion in Colorado. The complex geology of the area is a result of uplifting, faulting, and volcanic action. Several values in combination are considered to be remarkably outstanding. The scenic views are dominated by the massive rock formations of the Rio Grande River gorge, which is approximately 1,300 feet wide and 200 feet deep at the Colorado/New Mexico State line.

Recreational values are exceptional on the stretch of smooth water that flows through the canyon. The river is excellent for floatboating with remarkably outstanding opportunities for viewing waterfowl, hawks, owls, eagles, and big game in the close confines of the canyon walls. Inventories of raptor nesting sites indicate over 200 years of historical use. The remoteness of the area and the steep canyon walls offer an outstanding opportunity for solitude and a primitive recreation exprerience. Scenic vistas include a totally undisturbed view of the rock-strewn river bank and sheer canyon walls. In addition, the area shows much potential for cultural resources. Although no formal cultural inventories have been completed along this section of river, the area immediately to the north contains many cultural resource sites. Old reports also indicate the presence of prehistoric rock art and possible structural sites along this portion of the river.

There have been two possible dam sites investigated in this segment; one just north of the state line, and another near the northern end of the gorge. Potentially a dam could be built anywhere in the 6.8-mile gorge.

The northernmost 2 miles of Segment C extend from the mouth of the gorge segment to the Lobatos Bridge site. This portion lacks the geological diversity of the

southernmost 6.8 miles and is more accessible by road; therefore, the study team believes that a recreational classification is appropriate for this portion of Segment C. Recreational, wildlife, remoteness, and cultural values, however, are just as significant as the 6.8 mile-stretch. This 2-mile segment should become part of the national system because it provides the most logical access point for floating through the Rio Grande River gorge into New Mexico.

**Segments A and B**

The entire river length studied (41.5 miles) is free flowing; however, according to the professional judgment of the study team, Segments A and B do not meet the elgibility requirements for wild, scenic, or recreation designation. Classification criteria for wild or scenic designation require a primitive shoreline and shorelines largely undeveloped. The shoreline of a scenic river can be accessible in places by roads. Neither segment has a primitive shoreline and both segments are readily accessible by several roads. Although canoeing and floatboating opportunities are available, they are not considered to be a challenging whitewater experience. The river recreational values are not considered to be remarkable, mainly because of the lack of a unique physical river setting. Neither Segment A nor B possess outstandingly remarkable recreation values required for a recreation classification. Floatboating opportunities that offer an outstanding experience of solitude to the boater are not available on either Segment A or B. Opportunities to observe wildlife in a natural environment are available on both segments, but are not as concentrated, nor are the wildlife as close as in Segment C. Although relatively undisturbed natural foreground scenic vistas are present, the primitive view of the rock-strewn riverbank and sheer canyon walls are not present in A and B as they are in Segment C.

## Interim Management

Segment C (8.8 miles) has been determined to meet the eligibility requirements for wild and scenic river designation; therefore, this segment must be managed to protect these values until Congressional designation occurs. Nonimpairment interim management will be accomplished by excluding any facility development, limiting recreational and grazing use to the level occurring at the present time, and applying ACEC/SRMA status to the 1,760-acre wild and scenic proposal.

## Evaluation

Consultation with personnel from the Taos Resource Area, who manage the existing wild and scenic river segment in New Mexico, resulted in a consensus that there is a growing need for uniform management of the river from Lobatos Bridge south. Recreation use is growing rapidly; there is increased disturbance of nesting waterfowl and predatory birds; and successful wildlife reproduction is being diminished. It is becoming very apparent that more management control is needed to solve these problems.

The same outstanding values in New Mexico occur in the Colorado segment, and the rationale for deletion of the Colorado segment from the original designation is unclear.

The lack of public lands on the eastern side of this segment should not be viewed as a barrier to designation, as the same situation exists immediately adjacent in the existing New Mexico wild and scenic segment.

# SELECTION OF RECOMMENDATION

## Consensus of Study Group

The consensus is to include Segment C in the RMP process and recommend this segment to Congress for designation as an addition to the National Wild and Scenic River System. This segment meets the criteria for eligibility as it is free flowing and contains one or more values judged to be remarkably outstanding. Segments A and B do not meet the criteria for W&SR designation.

## Findings in Relation to Alternatives

*Existing Management Alternative*: The present management on the Rio Grande River by the Taos Resource Area is no longer adequate to monitor the growing use and provide the visitor services necessary to resolve conflicts with recreation use and wildlife. Segments B and C (21.1 miles) would be managed as an SRMA with emphasis on providing recreation and protecting wildlife values.

The continued efforts in finalizing the Bagwell and Quinlan exchanges are valid and necessary for management at any intensity level.

Use of the public lands along the river for grazing, hunting, fishing, and other recreational use would continue along the entire 41.5-mile river segment.

*Natural Resource Enhancement Alternative*: Segment C (8.8 miles) would be recommended as an addition to the wild and scenic river system and would also be included in the SRMA. Segment B and a portion of Segment A would be managed as an SRMA with emphasis on protecting wildlife values. This segment would extend from the New Mexico State line to the County Bridge, a distance of 28.4 miles. Acquisition of scenic and protective easements along the eastern bank of the river would be a management objective for both segments.

*Production Resource Enhancement Alternative*: In this alternative, the river segment from the state line to the northernmost limits of significant blocks of public land would be managed as an SRMA with emphasis on intensive use for recreation values such as floatboating, fishing, hunting, and sightseeing. The total length of this river segment would be 21.1 miles and would include Segments B and C.

*Preferred Alternative*: Segment C would be recommended as an addition to the W&SR system, and all powersite and water storage withdrawals would be recommended for revocation. Segment B would be developed with increased public access and measures taken to manage the area for more intensive use for recreation activities such as floatboating, fishing, hunting, and sightseeing. In Segment A, the river recreation site and access point at the County Bridge would be maintained to provide floatboating and other river related recreation needs.

*Summary of Recommendations and Findings in Relation to Alternatives*: Table E-1 summarizes the recommendations and findings relating to analysis of the alternatives.

## Table E-1
## SUMMARY OF RECOMMENDATIONS AND FINDINGS

| Alternative | Wild and Scenic River Length | SRMA River Length | Remarks |
|---|---|---|---|
| Existing Management Alternative | None | Segments B and C; 21.1 miles | Present management by Taos RA, continue efforts on exchanges |
| Natural Resource Enhancement Management Alternative | Segment C; 6.8 miles - Wild 2.0 miles - Recreation | Segment B and and portion of Segment A; 28.4 miles | Segment B and a portion of segment A with emphasis on recreation and wildlife protection. Acquire scenic or protective easements on eastern side; terminate withdrawals in Segment C |
| Production Resource Enhancement Management Alternative | None | Segments B and C; 21.1 miles | Intensive public use for 21.1 miles |
| Preferred Management Alternative | Segment C 6.8 miles - Wild; 2.0 miles - Recreation | Segment B 12.3 miles | Intensive recreational use for Segment B, public access only at County Bridge; terminate withdrawals in Segment C |

# APPENDIX F

# VISUAL RESOURCE MANAGEMENT

# APPENDIX F

# VISUAL RESOURCE MANAGEMENT

The Bureau of Land Management Visual Resource Management (VRM) system provides a method for analyzing and managing visual resources on public lands.

The basis of the VRM system is an inventory of visual resources. The components of the inventory are determinations of scenic quality, numbers of viewers, public attitudes regarding maintenance or modification of the scenery, the distance from which areas are viewed, and the existence of special considerations such as natural area or wilderness designations. All of these components are incorporated into a formula used to determine VRM classification ratings ranging from highly valued visual resource lands (VRM Class I and VRM Class II) to the lesser valued lands (VRM Class IV). A special fifth class (VRM Class V) is used to identify lands where rehabilitation is needed to improve visual qualities.

The management objectives for each VRM class are:

Class I: To design projects with no visual contrast to a low visual contrast;

Class II: To design projects with a low visual contrast;

Class III: To allow projects with a moderate visual contrast;

Class IV: To allow projects with a high visual contrast;

Class V: To rehabilitate damaged visual qualities. [1]

A low visually-contrasting project would be visible, but should not attract the attention of a casual observer. A high visually-contrasting project would dominate the landscape and be a major focus of a casual observer, but should still attempt to minimize the impact of these activites through careful location, minimal disturbance, and repetition of the basic elements.

The VRM system is utilized to determine appropriate visual design measures for proposed land uses. The degree of visual contrast between proposed projects and alternatives and the surrounding landscape is often compared as part of an overall environmental analysis of project proposals. As a result of this analysis, measures designed to reduce visual contrast or meet VRM class objectives are often incorporated into the design and construction methods of authorized land uses.

In addition, this process can be used to protect a significant visual resource. An example of this in this plan is the special visual resources of the Cumbres and Toltec Scenic Railroad corridor located in the southwest corner of the SLRMP planning area (Map F-1). This corridor was nominated as an ACEC because of the need to protect the scenic/visual resources visible from the train. This 3,284-acre corridor is proposed as an ACEC in the Natural Resource Enhancement and the Preferred Alternatives in this plan.

This process can also be used to rehabilitate existing projects to modify the degree of visual contrast. The following VRM demonstration project is the only example in the planning area:

## VRM PROJECT—BLANCA CHAINING REHABILITATION

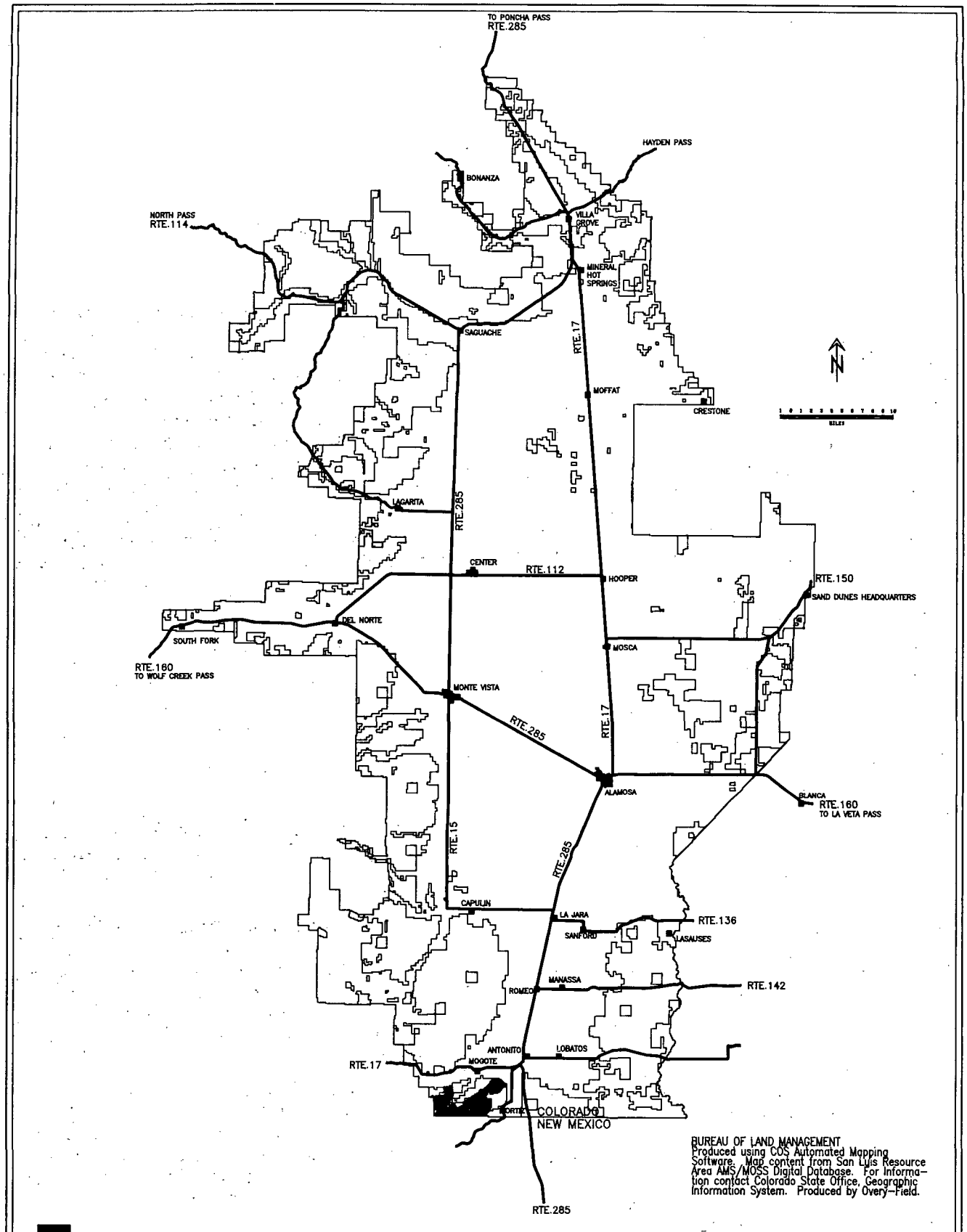
### Project Description/Rationale

This area, which is currently class V under the Bureau VRM rating system, would be rehabilitated to class III standards in the Natural Resource Enhancement and Preferred Alternatives.

The objective of the Blanca Chaining rehabilitation project is to improve the scenic quality of the Blanca Peak area by reducing the visual contrast between two pinon-juniper chainings and the surrounding natural landscape. The chainings total 1,275 acres and are located on the lower western slope of the mountain, approximately 16 miles east of Alamosa.

Under the Bureau VRM rating system, the area containing the Blanca Chainings is designated for management in conformance with class II objectives. This designation is based on the high scenic quality of the area, visibility to a large number of area residents and visitors, and location adjacent to a wilderness study area.

[1] The latest VRM inventory system does not include the special VRM Class V management category. However, the San Luis Resource Area was inventoried under the previous system, and the single class V area will be termed a special project area.




# Map F-1
## Cumbres and Toltec Scenic Railroad Visual Area

FOR A BETTER PERSPECTIVE OF BLM OWNERSHIP, SEE THE FOLDOUT MAP AT THE BACK OF THE PLAN.

Class II management objectives allow only for low visual contrast cultural modifications and require that any impacts from management practices repeat the basic elements within the characteristic landscape. Modifications may be seen, but should not attract the attention of the casual observer. Presently, the chaining area includes modifications, which dominate the landscape and are a major focus of viewer attention (see Figure F-1). The area, therefore, does not comply with class II standards.

The chaining project, completed in 1963, has had some revegetation in the last 25 years; however, the area still contrasts substantially with the surrounding natural features. Without rehabilitation measures, the chainings would continue to dominate the landscape and reduce the visual quality of the area near Blanca Peak. The proposed rehabilitation project would reduce the contrast of the chainings so the area conforms with class III VRM standards during the short term, with a long-term goal of class II standard conformance.

## Procedure

Although scenic quality evaluation is considered to be somewhat subjective, each landscape has certain identifiable, consistent qualities that can be objectively described, measured, and manipulated to improve the visual attractiveness of an area. Landscape character is primarily determined by the four basic visual elements of form, line, color, and texture. When a cultural modification borrows from the characteristic visual elements of the surrounding landscape, it normally would not detract from the scenic quality of the area. When the modification contrasts sharply with the natural features, however, as with the Blanca Chainings, it becomes visually unappealing.

To rehabilitate the Blanca Chaining area, the visual elements would be manipulated through carefully regulated woodland harvests to more closely resemble the visual elements of the surrounding characteristic landscape. For example, to reduce the contrast in texture coarseness, diameter limit cutting could be employed to gradually grade the smaller trees within the chainings into the larger trees of the surrounding woodlands. The bold, contrasting lines along the chaining/woodland edges would be more diffused through the use of selective thinnings of various intensities. Figure F-2 illustrates some of the cutting patterns that could be used to reduce the dominance of the chainings.

Use of woodland harvesting for rehabilitation would provide secondary benefits including fuelwood and Christmas trees for local residents. Since the tree crowns of the pinon and juniper woodlands are the most visible vegetation component, percent crown cover would be the specific factor of concern when determining harvest levels.

## Implementation

*Boundary Limitations*: Portions of the northern and western boundaries of the northern chaining lie immediately adjacent to private land (see Figure F-2). The lines that lie along these boundaries are the most abrupt and geometric (and, therefore, contrasting) of the entire chaining area. Efforts would be made to cooperate with the adjoining private landowner(s) in developing a plan to reduce the contrast of these lines.

Lands administered by the U.S. Forest Service are located near the eastern edge of the chainings, and efforts would be initiated to secure Forest Service cooperation in reducing the dominance of the chainings. The national forest boundary is 1,000 to 1,200 feet east of the northern chaining and 125 to 750 feet east of the southern chaining. Since these lands are currently administratively recommended for wilderness designation, the possibility for using timber harvesting for visual improvement would be very limited (see Figure F-2).

*Phases*: The edge modifications and selective thinnings would be conducted on approximately 870 acres of woodlands over a 10- to 12-year period. The SLRA allowable annual harvest in the Preferred Alternative is 633 cords of fuelwood, or 68 of the 11,992 acres of operable woodlands. Since the chaining rehabilitation project would involve a number of cutting levels, ranging from very light thinnings to small clearcuts, the allowable annual harvest would be based on volume instead of area. An inventory of the affected woodlands would be conducted prior to any cutting to ensure that the annual harvests would fall within the allowable cut limits, and to determine what cutting levels would be needed to produce the desired VRM objectives.

To ensure maximum control over cutting, individual trees would be marked for removal. Reduced fuelwood demand may increase the amount of time needed to implement the project. Christmas tree permits with clear instructions concerning the limitations of areas open for cutting would be issued to individuals. If after the first 2 years, cuttings are not fulfilling the prescribed visual objectives, the project would be reassessed, and continued/discontinued at the discretion of the area manager.

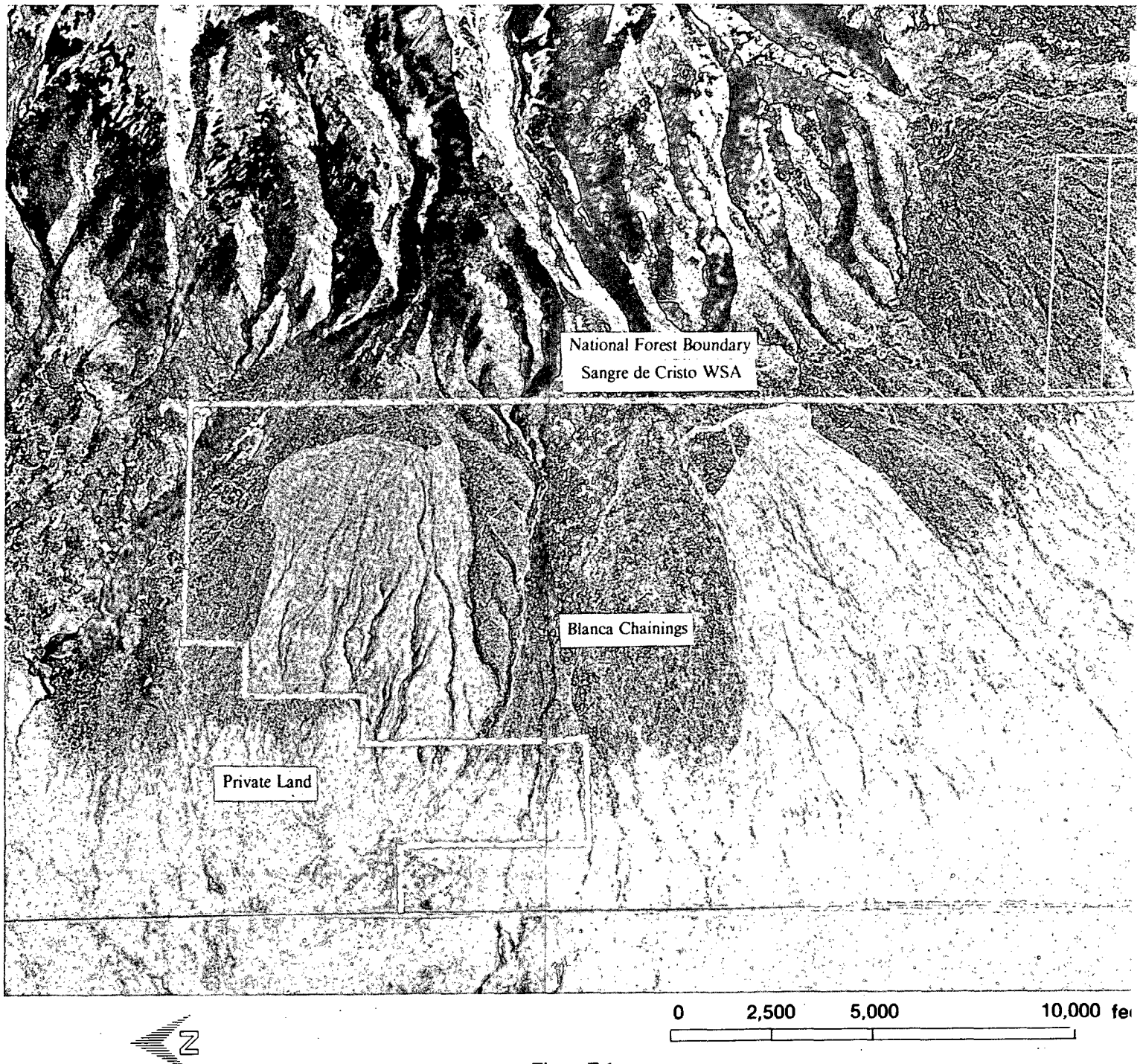
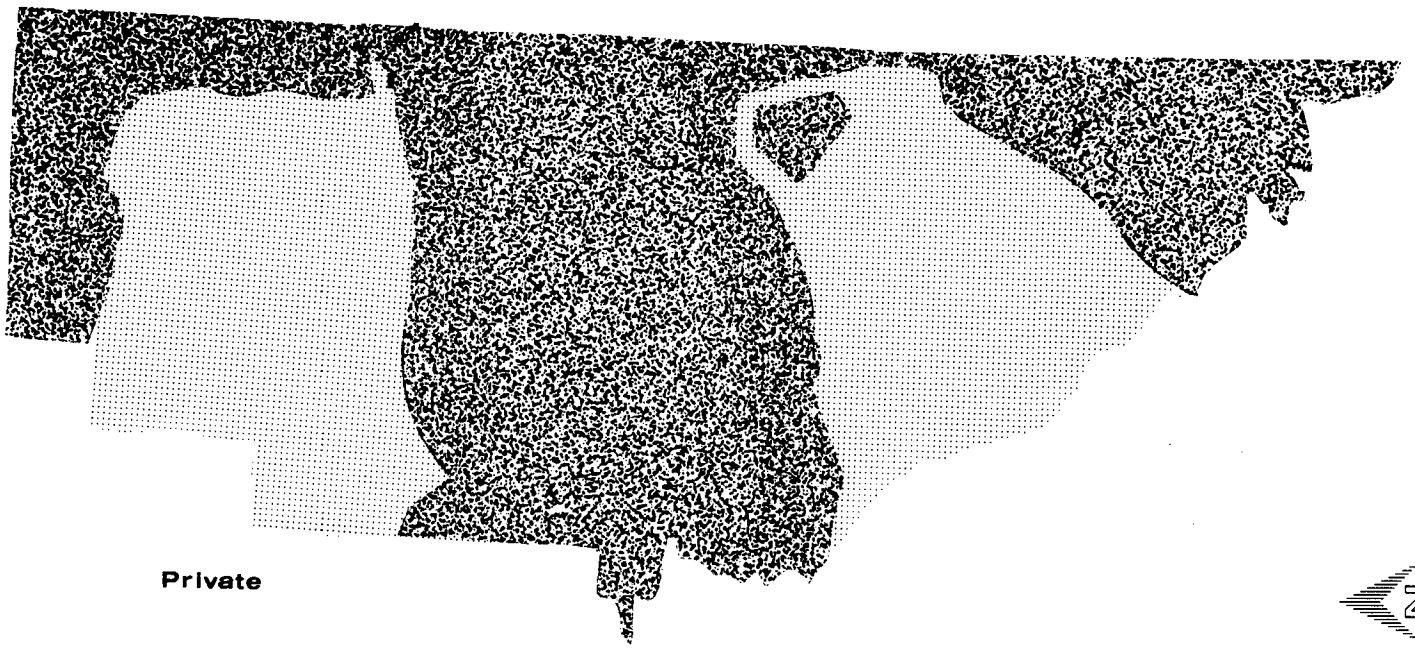


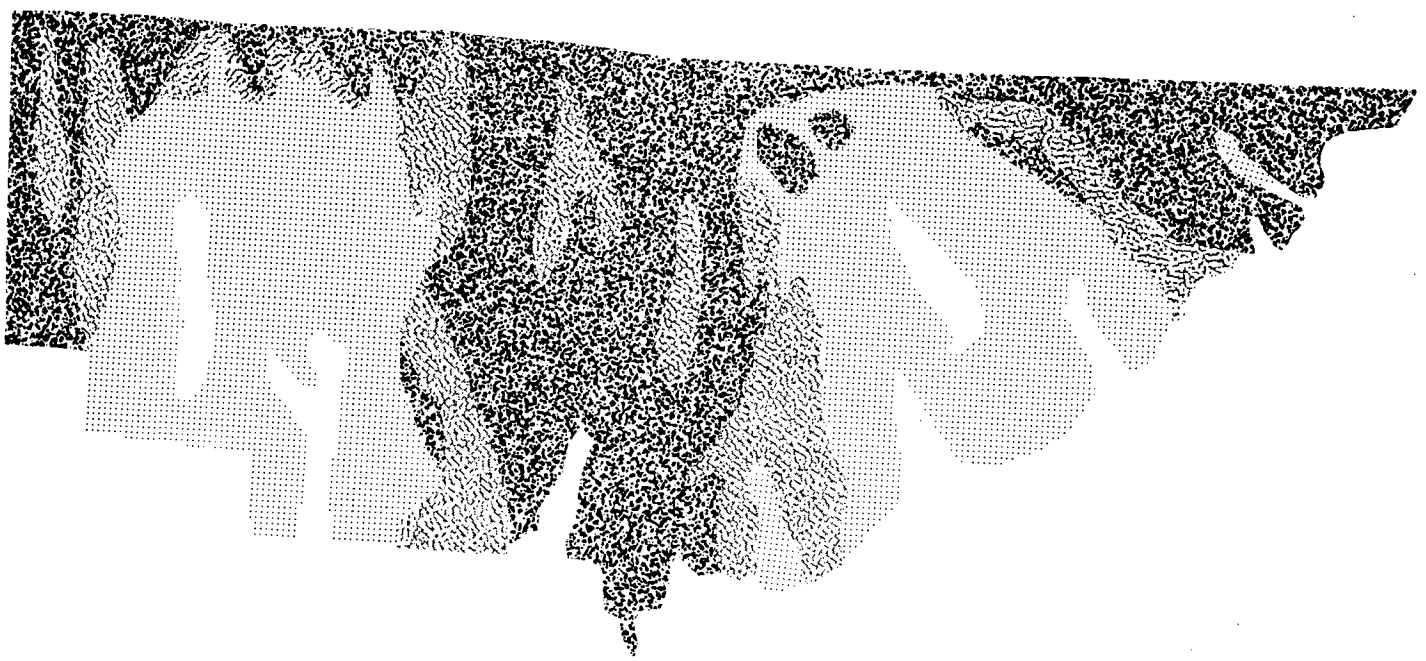

Figure F-1

Copy of a 1983 Aerial Photograph
Showing the Blanca Chainings and Surroundings

**Blanca Chaining Rehabilitation Project Area**




**Existing Situation**



**Example of cutting patterns that could be used to reduce visual contrasts**

Scale 1.8 inches = 1 mile

Figure F-2

# APPENDIX G

# ECONOMIC CONDITION AND SOCIAL ENVIRONMENT

# TABLE G-1
# EARNINGS BY PLACE OF WORK BY COUNTY
## (In Thousands)

| | Alamosa County | | | Conejos County | | | Costilla County | | | Rio Grande County | | | Saguache County | | | ESA | ESA | ESA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1982 | 1983 | 1984 | 1982 | 1983 | 1984 | 1982 | 1983 | 1984 | 1982 | 1983 | 1984 | 1982 | 1983 | 1984 | 1982 | 1983 | 1984 |
| Earnings by Type: | | | | | | | | | | | | | | | | | | |
| Wage & Salary | | | | | | | | | | | | | | | | | | |
| Disbursements | 59,394 | 64,083 | 61,739 | 16,832 | 17,027 | 17,871 | 5,887 | 6,286 | 7,084 | 44,717 | 45,059 | 47,258 | 10,451 | 10,113 | 11,042 | 137,281 | 142,568 | 144,994 |
| Other Labor Income | 4,907 | 5,624 | 5,687 | 1,225 | 1,290 | 1,388 | 357 | 432 | 496 | 3,784 | 4,088 | 4,422 | 648 | 672 | 838 | 10,921 | 12,106 | 12,831 |
| Proprietors' Income | 11,900 | 12,048 | 16,958 | 2,503 | 1,749 | 4,142 | 7,396 | 7,498 | 8,425 | 12,004 | 8,565 | 13,686 | 4,742 | 3,757 | 8,061 | 38,545 | 33,617 | 5,272 |
| Farm Prop. Income | 3,691 | 2,564 | 6,198 | 317 | 745 | 1,367 | 6,087 | 5,928 | 6,626 | 5,897 | 1,253 | 5,358 | 2,909 | 1,556 | 5,545 | 18,901 | 10,556 | 25,094 |
| Nonfarm Prop. Income | 8,209 | 9,484 | 10,760 | 2,186 | 2,494 | 2,775 | 1,309 | 1,570 | 1,799 | 6,107 | 7,312 | 8,328 | 1,833 | 2,201 | 2,516 | 19,644 | 23,061 | 26,178 |
| Earnings by Industry: | | | | | | | | | | | | | | | | | | |
| Farm Wage & Salary Income | 5,493 | 4,317 | 8,013 | 3,296 | 2,156 | 4,372 | 7,344 | 7,145 | 7,884 | 10,938 | 6,182 | 10,472 | 5,431 | 4,041 | 8,131 | 32,502 | 23,841 | 38,872 |
| Nonfarm Wage & Salary Income | 70,708 | 77,438 | 76,371 | 17,264 | 17,910 | 19,029 | 6,296 | 7,071 | 8,121 | 49,567 | 51,530 | 54,894 | 10,410 | 10,501 | 11,810 | 154,245 | 164,524 | 169,988 |
| Private Wage & Salary Income | 53,441 | 59,164 | 57,274 | 11,463 | 11,604 | 12,391 | 3,504 | 3,958 | 4,627 | 38,007 | 39,118 | 41,945 | 6,258 | 6,016 | 7,193 | 112,673 | 119,860 | 123,430 |
| Agri. Services, Forestry, Fish & Other Game | - | - | - | - | - | - | 3,504 | 3,958 | 4,627 | 2,704 | - | - | - | 766 | - | 2,704 | 766 | - |
| Mining Income | - | - | - | - | - | - | - | - | - | 124 | - | - | - | - | - | 124 | - | - |
| Construction Income | 4,294 | 4,820 | 6,277 | 340 | 386 | 464 | 434 | 619 | 727 | 2,383 | 2,268 | 2,762 | - | 770 | 1,013 | 7,451 | 8,863 | 11,293 |
| Manufacturing Income | 1,993 | 1,668 | 1,080 | 1,563 | 1,329 | 1,455 | - | - | - | 5,944 | 5,958 | 5,704 | 200 | 211 | 282 | 9,700 | 9,166 | 8,521 |
| Nondurable Goods Inc. | 1,806 | 1,518 | 925 | - | - | - | - | - | - | 2,958 | 2,594 | 2,207 | - | - | - | 4,764 | 4,112 | 3,132 |
| Durable Goods Income | 187 | 150 | 155 | 1,539 | 1,299 | 1,418 | - | - | - | 2,986 | 3,364 | 3,497 | 200 | 211 | 282 | 4,912 | 5,024 | 5,352 |
| Transportation & Public Utilities Income | 8,746 | 8,029 | 7,412 | 1,225 | 1,335 | 1,542 | 285 | 302 | 321 | 3,491 | 3,642 | 3,959 | 340 | 421 | 403 | 14,087 | 13,729 | 13,637 |
| Wholesale Trade Income | 3,117 | 3,457 | 4,317 | 489 | 505 | 533 | 236 | 239 | 308 | 5,417 | 5,391 | 5,989 | 1,078 | 947 | 1,028 | 10,337 | 10,539 | 12,175 |
| Retail Trade Income | 10,798 | 11,606 | 12,155 | 1,376 | 1,512 | 1,619 | 748 | 746 | 776 | 6,296 | 6,494 | 6,361 | 1,066 | 1,042 | 1,124 | 20,284 | 21,400 | 22,035 |
| Finance, Insurance & Real Estate Income | 5,438 | 8,672 | 3,781 | 547 | 631 | 746 | 876 | 1,000 | 1,165 | 1,834 | 2,343 | 2,511 | - | 700 | 423 | 8,695 | 13,346 | 8,716 |
| Services Income | 17,046 | 18,796 | 20,517 | 3,648 | 3,404 | 3,362 | - | - | - | 9,814 | 10,290 | 10,901 | 1,098 | 1,196 | 1,431 | 31,606 | 33,686 | 36,211 |
| Govt. & Govt. Enterprises Income | 17,267 | 18,274 | 19,097 | 5,801 | 6,306 | 6,638 | 2,792 | 3,113 | 3,494 | 11,560 | 12,412 | 12,949 | 4,152 | 4,485 | 4,617 | 41,572 | 44,590 | 46,795 |
| Federal, Civilian Income | 3,386 | 3,901 | 4,063 | 798 | 977 | 1,012 | 352 | 353 | 378 | 3,209 | 3,471 | 3,327 | 686 | 753 | 683 | 8,431 | 9,455 | 9,463 |
| Military Income | 292 | 329 | 291 | 164 | 195 | 190 | 67 | 82 | 81 | 233 | 272 | 265 | 85 | 99 | 96 | 841 | 977 | 923 |
| State & Local Government Income | 13,589 | 14,044 | 14,743 | 4,839 | 5,134 | 5,436 | 2,373 | 2,678 | 3,035 | 8,118 | 8,669 | 9,357 | 3,381 | 3,633 | 3,838 | 32,300 | 34,158 | 36,409 |

Source: Bureau of Economic Analysis

## Table G-2
## RETAIL SALES BY SECTOR AND COUNTY, 1985
(by thousands)

| | Alamosa | Conejos | Costilla | Rio Grande | Saguache |
|---|---|---|---|---|---|
| Agriculture | 35 | 40 | 14 | 57 | 32 |
| Mining | 0 | 111 | 9 | 0 | 0 |
| Construction | 3,490 | 144 | 173 | 5,551 | 366 |
| Transportation, etc. | 10,632 | 3,270 | 1,395 | 15,915 | 3,018 |
| Manufacturing | 113 | 5 | 0 | 4,270 | 17 |
| Wholesale Trade | 8,252 | 4,963 | 1,506 | 2,299 | 37 |
| Retail Trade | 99,104 | 15,490 | 4,582 | 96,169 | 17,067 |
| Insurance, Real Estate | 0 | 0 | 0 | 43 | 3 |
| Hotels | 4,247 | 821 | 233 | 2,919 | 42 |
| Miscellaneous Services | 6,396 | 694 | 218 | 4,067 | 353 |
| Government | 0 | 0 | 0 | 0 | 12 |
| Nonclassified | 0 | 0 | 0 | 0 | 0 |
| TOTAL RETAIL SALES | 132,269 | 25,538 | 8,130 | 131,290 | 20,947 |

Source: Colorado Department of Revenue

## Table G-3
## EXPENDITURES BY ACTIVITY AND ALTERNATIVE

| | | | | Alternatives | | |
|---|---|---|---|---|---|---|
| Activity | Expenditure | Base | Existing Management | Natural Resource Enhancement | Resource Production Enhancement | Preferred |
| OHV | 13 | 246,220 | 280,198 | 275,168 | 280,198 | 282,122 |
| O/Motor | 13 | 115,960 | 131,962 | 105,629 | 147,792 | 139,064 |
| Nonmotor | 13 | 193,310 | 219,987 | 263,925 | 164,953 | 219,987 |
| Camping | 10 | 87,400 | 99,461 | 101,396 | 95,023 | 99,461 |
| Hunting | 15 | 211,350 | 240,516 | 250,076 | 230,957 | 247,515 |
| Land Based | 13 | 319,540 | 363,637 | 370,886 | 349,138 | 370,886 |
| Fishing | 14 | 529,340 | 602,389 | 614,497 | 590,281 | 602,389 |
| Boating | 60 | 75,600 | 86,033 | 68,963 | 103,103 | 81,936 |
| Other Water | 13 | 94,510 | 107,552 | 110,955 | 103,558 | 107,552 |
| Winter Sports | 70 | 14,000 | 15,932 | 19,118 | 17,525 | 19,118 |
| Snowmobiling | 13 | 6,890 | 7,841 | 6,657 | 8,581 | 7,841 |
| Total | | 1,894,120 | 2,155,508 | 2,187,270 | 2,091,109 | 2,177,870 |

# APPENDIX H

# AREAS OF SPECIAL CONCERN

# APPENDIX H

# AREAS OF SPECIAL CONCERN

## INTRODUCTION

This appendix relating to areas of special concern is presented in three parts: 1) a discussion and listing of the initial areas potenially needing some type of special management; 2) a discussion of the areas/sites that were screened for consideration as ACECs; and 3) a discussion and comparison between the areas in each of the four alternatives.

## INITIAL NOMINATIONS

There were 22 areas/sites initially considered for some type of special managment (e.g., SRMA, ACEC, WHA, etc.) within this RMP. These areas/sites are listed and described in Table H-1.

## ACEC SCREENING

The ACEC screening process to select areas recommended for designation was accomplished by using regulation criteria and the following definitions that were determined by the screening workgroup.

**Relevance**

Value requiring special management attention (what would happen to value(s) if area not designated).

Special values present

Protection of life and safety from natural hazards

**Importance**

Has special worth or meaning or

Has distinctiveness or

There is cause for concern or

Is more than locally significant or

Is a significant threat to life and property

Figure H-1 describes the process used in screening areas/sites for consideration within this RMP.

Ten of the initial 22 sites were determined to need special management and would be considered as potential ACECS. Table H-2 shows each area considered, the analysis of the area/site compared to the criteria, and whether or not the area/site meets the criteria.

Black Canyon, South Piney Creek, Papa Keal, and Zapata Creek WSAs were dropped because there was little chance of irreparable damage to any of the values, and they do not meet the relevancy and importance criteria.

Table H-3 presents discussions on two new proposed ACECs and on four previously nominated sites.

## SPECIAL AREAS IN THE PLAN ALTERNATIVES

As the alternatives were developed, the 10 areas/sites determined to be utilized within this RMP were made part of the resource and resource use management in each of the four alternatives. Table H-4 summarizes this utilization.

## Table H-1

## INITIAL NOMINATIONS FOR AREAS OF SPECIAL CONCERN

| Area Name and Description | GIS Name (encoded for map) | Size (in acres) | Location |
|---|---|---|---|
| Black Canyon WSA (scenic,recreational, naturalness, wilderness, and visual values) [1] | BLKCAN#1W | 2,737 | T.46N R.10E |
| South Piney Creek WSA (scenic, recreational, wilderness, visual values) [1] | SOPNCK#2W | 1,587 | T.46N R.11E |
| Sand Castle WSA (scenic, recreational, archaeological, wildlife, and wilderness values) [2] | SANCAS#3W | 1,644 | T.40N R.13E |
| Papa Keal WSA (scenic, recreational, wilderness values) [1] | PAPAKL#4W | 1,020 | T.27S R.13E |
| Zapata Creek WSA (scenic, recreational, and wilderness values) [1] | ZAPACK#5W | 614 | T.27S R.13E |
| San Luis Hills WSA (scenic, recreational, wildlife, archaeological, visual, wilderness, and special plant and animal values) [2] | SALUHL#6W | 12,514 | T.33N R.10E |
| Blanca Wildlife Area (recreational, wildlife, riparian, scenic, special plant and animal values; has special public use needs) | BLANAR#7 | 5,500 | T.38N R.11E |
| Trickle Mountain Area (wildlife, scenic, recreational, visual, special plant and animal values; has special public use needs) | TRKMTN#8 | 19,562 | T.45N R. 5E |
| Rio Grande River (recreational, scenic, archaeological, historical, wilderness, riparian, geologic, visual, special plant and animals, wild and scenic river values; has special public use needs) [3] | RGRIVR#9 | 3,360 | T.33N R.11E |
| Elephant Rocks Area (scenic, visual, geologic, naturalness, recreational, historical, special plant values) | ELPRCK#10 | 1,240 | T.40N R. 6E |
| Paleo Indian Site (Stewart's Cattleguard Site) (archaeological, recreational, scenic, special plant values; has special public use needs) | PALINDCUL#11 | 1,920 | T.40N R 12E |
| Twin Peaks Area (naturalness, scenic, visual wilderness, archaeological values) | TWINPK#12 | 3,300 | T.32N R.11E |
| Flat Top Area (wilderness, wildlife, recreational, scenic, visual, naturalness, archaeological, geologic, special plant and animal values) | FLATTP#13 | 9,114 | T.34N R.10E |
| La Jara Creek Area (riparian,scenic, recreational, wildlife values) | LAJACKRIP#1 | 240 | T.34N R. 7E |

**Table H-1(Continued)**

| Area Name and Description | GIS Name (encoded for map) | Size (in acres) | Location |
|---|---|---|---|
| La Garita Creek Area (riparian, scenic, recreational, wildlife values) | LAGACKRIP#15 | 320 | T.41N R. 6E |
| Rio Grande River Box Area (recreational,scenic, visual, riparian, wildlife, geologic, naturalness, wild and scenic river values; has special public use needs) [3] | RGRVBOXAR#16 | 1,640 | T.34N R.11E |
| Bishop Rock Site (geologic, recreational, naturalness, visual, scenic, archaeological, historical, values) | BISROCK#17 | 2,180 | T.38N R. 6E |
| Poncha Pass Conservation Area (scenic, recreational, visual, ecological research, wildlife, and historical values; has special public use needs) | PONPASCON#18 | 5,870 | T.48N R. 8E |
| Big Horn Erosion Area (special management needed for erosion problems) | BGHREROAR#19 | 760 | T.32N R. 7E |
| Cumbres and Toltec Scenic Railroad Corridor (special management needed for historical railroad visual/ scenic corridor; National Register of Historic Places site) | C&TSRRCOR#20 | 3,700 | T.32N R. 8E |
| Ford Creek Area (riparian, wildlife scenic, recreational values; special management needed for riparian demonstration area) | FORDCKRIP#21 | 1,280 | T.46N R. 6E |
| Los Mogotes Area (wildlife, special plant and animal, scenic, visual values) | LOSMOG#22 | 33,456 | Tps.33 and 34N Rs.7 and 8E |

[1] These BLM wilderness study units are adjacent to the U.S. Forest Service wilderness study units that are recommended for inclusion in the National Wilderness System.

[2] These BLM wilderness study units are identified by BLM as not recommended for inclusion into the National Wilderness System.

[3] These two nominated areas are adjacent to the Rio Grande Corridor area and may be combined into one unit.

# THE ACEC PROCESS - BLM
# AREAS OF CRITICAL ENVIRONMENTAL CONCERN 7/89

| | MANAGEMENT SITUATION ANALYSIS | DRAFT RES. MGT PLAN / DRAFT EIS | PROPOSED RMP FINAL EIS | APPROVED RMP/ RECORD OF DECISION | IMPLEMENTATION OF APPROVED RMP |
|---|---|---|---|---|---|
| **NOTICES** | NOTICE OF INTENT TO PLAN | NOTICE OF AVAILABILITY | NOTICE OF AVAILABILITY | NOTICE OF DECISION | |
| **PRODUCTS** | MANAGEMENT SITUATION ANALYSIS (MSA) | DRAFT RMP/ DRAFT EIS | PROPOSED RMP/ FINAL EIS | APPROVED RMP/ RECORD OF DECISION | ACEC MGT. PLANS |
| **PROCESS** | **NOMINATE POTENTIAL ACECs** BY: RESOURCE SPECIALISTS, MANAGERS, PUBLIC<br><br>**SCREEN NOMINATIONS FOR:**<br><br>* RELEVANCE<br>* IMPORTANCE<br><br>**DOCUMENT SCREENING**<br><br>**DROP OUT NOMINATIONS** WHICH DO NOT MEET SCREENING CRITERIA<br><br>CARRY FOREWARD POTENTIAL ACECs | **DISPLAY SCREENING RESULTS:**<br>* ACROSS THE VARIOUS ALTERNATIVES<br><br>* SHOWN AS POTENTIAL ACECs<br><br>* PREFERRED ALTERNATIVE TO INCLUDE MGT's RECOMMEMDATIONS<br><br>(NOMINATIONS NOT PASSING SCREENING TO BE DOCUMENTED IN APPENDIX) | **CONSIDER PUBLIC COMMENTS**<br><br>**PREPARE PROPOSED RMP/FINAL EIS**<br><br>* FINAL POTENTIAL ACECs INCLUDED<br><br>* INCLUDE DESCRIPTIONS, INCLUDING:<br>- PROPOSED GENERAL MGT. PRACTICES AND USES INVOLVED<br>- MITIGATING MEASURES<br><br>ACCEPT PROTESTS | **RESOLVE PROTESTS**<br><br>**PREPARE APPROVED RMP**<br><br>**PREPARE RECORD OF DECISION**<br><br>(BASED ON PROTEST RESOLUTION)<br><br>**NOTIFY PUBLIC OF DESIGNATED ACECs** | **IMPLEMENT APPROVED RESOURCE MANAGEMENT PLAN**<br><br>**DEVELOP ACEC MANAGEMENT PLANS**<br><br>**MANAGE ACECs**<br><br>**MONITOR ACECs**<br><br>(REVISE MGT. PLANS AS NECESSARY) |



Figure H-1

## Table H-2
## SCREENING PROCESS FOR ACECs

| Name of Area | Analysis of Site Criteria | Conclusion |
|---|---|---|
| Sand Castle WSA/ Cattleguard Site | Consolidate with Sand Castle site (areas overlap; same characteristics; no need to examine separately)<br><br>National register type of site (Folsom Man—more than locally significant)<br><br>Specialized wildlife (insects—an extension from resources on Dunes New Mexico; more than locally significant).<br><br>Fragile (could be easily disturbed by OHV activity)<br><br>Smithsonian excavation site (Folsom Man) | Meets criteria |
| San Luis Hills WSA | Special plants need protection from overgrazing, overbrowsing, fire-wood cutting activities, hard rock prospecting<br><br>Crucial winter range, provides exceptional vistas of San Luis Valley, mixed opinion as to whether or not area meets R&I criteria<br><br>WSA status creates more local interest<br><br>Example of possible solarization (P/J stand) | Meets criteria, carry forward; assess boundary |
| Blanca Wildlife Area | Highly developed site<br><br>Damage could occur from other resource activities if not properly managed<br><br>Major waterfowl nesting site (international flyway)<br><br>Heavy public use; values need to be protected<br><br>Primary value (wildlife) may need protection by limiting other values (people impacts)<br><br>Use by nonvalley residents; more than locally significant<br><br>Present mineral withdrawal<br><br>Management desire to highlight | Meets criteria; carry forward to RMP (maybe natural value alternative) |
| Trickle Mountain Area/ Ford Creek | May need to adjust boundary (similar values)<br><br>Special values (crucial winter area, 4 big game species; subject matter for educational and research purposes (wildlife, vegetation); sheep transplant area; special plants; high scenic and recreation qualities)<br><br>Ford Creek area (potential for research (vegetation, wildlife)<br><br>Existing ORV use designation<br><br>Present HMP | Meets criteria; boundary area south and west Hwy 114; east Dry Creek; north USFS |

**Table H-2 (Continued)**

| Name of Area | Analysis of Site Criteria | Conclusion |
|---|---|---|
| Rio Grande River Corridor Area | Combine corridor with box area<br>Extract Twin Mountain Peaks area within river corridor<br>Values (endangered plant and animal habitat; regional passerine and waterfowl flyway; riparian value in poor condition (capable of restoration with improvement and protection); recreation (float-boating, sight seeing, fishing); cultural, historical sites)<br>Consideration for wild and scenic designation<br>Strong political sensitivity for consideration | Meets criteria; adjust boundary to include Upper Box and Twin Mountain Peaks |
| Elephant Rocks Area | Special plants (possible conflicts with off-road vehicles and mining)<br>Unique geological characteristics<br>Possible expansion to include historical wagon tracks (locally significant)<br>Interest from public groups<br>May be more than locally significant | May meet criteria; include in RMP alternatives |
| Paleo/Indian Cultural<br>Twin Peaks Site | Incorporate in Sand Castle Site<br>Cultural values; special management not necessary<br>River corridor extracted and added to Rio Grande River Corridor<br>Only locally significant<br>Taos RA considered similar adjacent land; did not designate as ACEC | Does not meet criteria; do not carry forward to RMP |
| Flat Top Area | Mesa is roadless, undisturbed, not grazed; inaccessible except by foot or horseback<br>Special plants (T&E species)<br>Geologic uniqueness<br>Raptors<br>Crucial winter range, large concentrations of deer and antelope in confined area<br>Interest by numerous groups outside San Luis Valley (proposed by CNAP) | Meets criteria, carry forward into RMP |
| La Jara Creek Area | Riparian only distinctive values<br>No special protection needs since no other values present | Does not meet criteria; do not carry forward |

**Table H-2 (Continued)**

| Name of Area | Analysis of Site Criteria | Conclusion |
|---|---|---|
| La Garita Creek Area | Newly acquired parcel<br>Contains riparian values<br>Additional study needed to determine values; does not need special protection<br>Only locally significant | Does not meet criteria; do not carry forward |
| Box Area | Included with Rio Grand Corridor | |
| Bishop Rock Site | Unique landmark<br>Cultural resource (petroglyphs presently disturbed by vandals)<br>Possible endangered or sensitive plant<br>Questionably more than locally significant; although interest from groups outside the valley | May or may not meet criteria; consider in RMP |
| Poncha Pass Conservation Area | Existing conservation area<br>No ongoing major or special studies<br>Not presently a demonstration area<br>No unique scenic values | Does not meet criteria; do not carry forward |
| Big Horn Erosion Area | Area of active erosion; not unique<br>Only locally significant | Does not meet criteria; do not include in RMP |
| Cumbres and Toltec Railroad Corridor | National Historical Register Site/ Interstate Resource<br>Importance reliant on viewshed<br>Important area economic element<br>Very important recreation resource | Meets criteria; include in RMP |
| Ford Creek | Included in Trickle Mountain | |

**Table H-2 (Continued)**

| Name of Area | Analysis of Site Criteria | Conclusion |
|---|---|---|
| Los Mogotes | Critical winter range for four game species<br>Fawning area for antelope<br>Special plant study needed<br>Unique open area; no trees or cover in winter range<br>Potential conflicts with ORV use and cinder exploration and sale<br>Large concentrations of animals in the winter<br>VRM sensitivity | Meets criteria; carry forward to RMP |
| Wagon Ruts | Historical wagon tracks/values<br>May be known only locally | Consider as satellite unit or with Elephant Rocks |

## TABLE H-3
## ADDITIONAL SCREENING FOR ACEC's

| Name of Area | Analysis of Site Criteria | Conclusion |
|---|---|---|
| Carnero Canyon | Site is on private land | Dropped from consideration as ACEC |
| Rajadero Canyon | Site is location of *Astragalus ripleyi*, a candidate for the T&E plant species listing (may be on listing soon) | Address special management for species on other BLM ACECs; fully cooperate with CNAP/CNPS to undertake a site inventory |
| Wagon Ruts<br>Dry Creek/Rock Creek<br>Bishop Rock<br>Elephant Rocks | Reanalyzed sites with new information from CNAP, USFWS, CNPS, and CEC | Address special management needs in the cultural resource management portion of the area-wide support services management plan |

## TABLE H-4
## TEN SPECIAL MANAGEMENT AREAS BY ALTERNATIVE

| Type of Special Management | Alternatives | | | |
|---|---|---|---|---|
| | Existing Management | Natural Resource Enhancement | Resource Production Enhancement | Preferred |
| SRMA | Segments B & C Rio Grande River Corridor (21.1 Miles) Blanca | Segments B, C & portion of Segment A Rio Grand River Corridor (37.6 Miles) | Segments B & C Rio Grande River Corridor (21.1 Miles) Blanca | Segments B & C Rio Grande River Corridor (21.1 Miles) Blanca |
| WHA | Trickle Blanca | Trickle Blanca | Trickle | Trickle Blanca |
| ACEC | | Trickle Sand Castle Rio Grande Los Mogotes San Luis Flat Top C & T RR Elephant Rocks Bishop Rock | | Trickle Sand Castle Rio Grande Los Mogotes San Luis [1] C & T RR Elephant Rocks |
| Wild & Scenic | | Segment C of Rio Grande River Corridor (8.8 Miles) | | Segment C of Rio Grande River Corridor (8.8 Miles) |

[1] Flat Top is combined with San Luis ACEC in the Preferred Alternative.

# APPENDIX I

# WATERPOWER/STORAGE

# APPENDIX I

# WATERPOWER AND STORAGE

The following general background information on waterpower and storage will give the reader a basic understanding of these resources on the public lands in the SLRMP planning area.

Waterpower and reservoir sites should be sized to provide the desired control without unnecessary expense of oversizing. Many times the physical topography will not allow the control, and several dams are considered. Water diverted out of a stream generally creates a vertical distance or fall between the flows and the stream. This fall can be utilized to create waterpower. Diversion dams are also beneficial users of this water fall.

During the 40-year period from 1879 to 1919, Congress passed several laws requiring the withdrawal of reservoir and waterpower sites. These withdrawals are a form of long-range planning, imposing constraints on the land managers to protect the reservoir or waterpower values. BLM has the responsibility to investigate the value of reservoir and waterpower sites on all Federal land and make recommendations to the Secretary of the Interior as to withdrawal status changes. In the planning process, the resource decision should already be made (by the Secretary of Interior, with the concurrence of the management agency) on the reservoirs affected by the withdrawals. Recommendations to alter the resource decision, therefore, would require substantial justification. The lands affected by a site with any of the lands withdrawn would be managed as though the waterpower or reservoir potential has the highest priority among a number of possible uses. Other uses must be conditioned in such a way as to protect the use of the site for waterpower or reservoir purposes. The term for this type of management is "intensive management of waterpower or reservoir sites." If the management agency pursues a withdrawal status change, the land should still be managed intensively for waterpower until the change is effected.

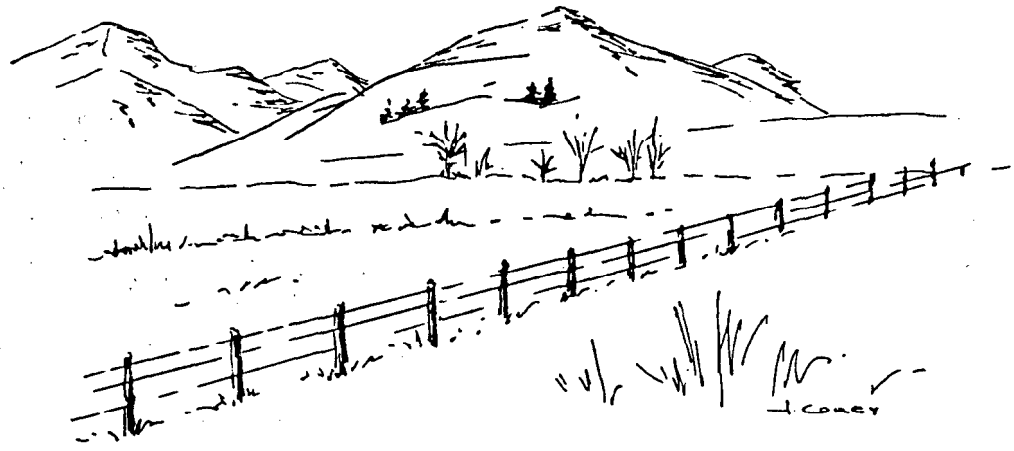
Those sites not withdrawn pose unique management challenges to the land manager, because the manager has resource protection and planning responsibilities and must consider multiple resource conflicts. Land with reservoir or waterpower possibilities not protected by a withdrawal often have other resource uses with increasing importance as multiple use becomes more complicated because of more interest in the use of public land. These sites would be acknowledged and restrictively managed for waterpower sites. Unnecessary uses that might endanger the reservoir or waterpower values would be avoided. A withdrawal made by application to the Federal Energy Regulatory Commission (FERC) can occur without consultation with the land manager, which could change management direction and discretion almost instantaneously. Prior to any uses being allowed on a site(s) by a land manager, FERC would be contacted to determine withdrawal status (FERC must give concurrence before the use occurs). An application for exemptions, preliminary permits, or licenses filed with the Federal Energy Regulatory Commission would be reviewed on a case-by-case basis when received. Use restrictions on the land, prohibitions, or mitigation of other resources would be given to FERC through the Secretary of the Interior.

Land managers need to consider whether or not other specific resource values have a higher value only when the resources are in conflict. Management discretion is permissible when the site is not in withdrawal; however, the possibility should be considered since such withdrawal is not under the control of the manager. If the site is within a withdrawal, and the manager thinks that higher resource values exist and are in conflict with the withdrawn resource, he has avenues to recommend changes. The responsibility rests on the manager to present facts and arguments to persuade higher authorities to affect change. The BLM RMP should address this and contain analysis explaining why the development of waterpower or reservoirs is recommended for exclusion. Statements of the potential of waterpower or reservoir sites and of the relative values of the recommendation are to be included. If it is an Interior withdrawal, the BLM Director is to recommend change to the Secretary of the Interior, after comments by the Federal Energy Regulatory Commission. If it is a withdrawal created under the authority of the Federal Power Act, the State Director with appropriate regional waterpower authority recommends the changes to the Federal Energy Regulatory Commission. After concurring action by the appropriate agency, BLM would recommend termination of the Interior withdrawal.

It is noted that Congress did pass the *Water Resources Planning Act* on July 21, 1965. This act established a Water Resource Council with the responsibility to provide a framework for water resource planning. The council made a national assessment of water resource needs, several "Level B Studies" on specific needs of river basins, and at least started some "Level C Studies" on site-specific needs. These studies, if completed, would have provided land managers with valuable information on planning and needs for the

development of sites in their areas. Program funding was terminated and remains unfunded, but it is worthy to note that it is the policy of Congress to encourage the conservation, development, and utilization of water and related land resources on a comprehensive and coordinated basis.

Congress was specific when it passed the *Wilderness Act* of September 3, 1964, and did not retain this right to determine compatibility between prospecting or development of water resource sites and the wilderness resource. This original act left the compatibility question as a responsibility of the President. Specific wilderness acts following this original one has left compatibility responsibility to others. The land manager will look at the possible compatibility if a conflict exists, in case the question could be resolved at the local level.



# ACRONYMS/

# BIBLIOGRAPHY/

# GLOSSARY

# ACRONYMS

ACEC—Areas of critical environmental concern
ATV—All terrain vehicle
AMP—Allotment management plan
ARPA—Archaeological Resources Protection Act
AUM—Animal unit month
BLM—Bureau of Land Management
CFL—Commercial forest land
CFR—Code of Federal Regulations
CRMAP—Coordinated resource management activity plan
CRMP—Cultural resource management plan
CNAP—Colorado Natural Areas Program
DOW—Division of Wildlife
EA—Environmental assessment
EIS—Environmental impact statement
ESA—Economic study area
EPA—Environmental Protection Agency
FERC—Federal Energy Regulatory Commission
FLPMA—Federal Land Policy Management Act
FMP—Forest management plan
FR—Federal Register
HMP—Habitat management plan
IMPG—Interim Management Policy and Guidelines
LTA—Land tenure adjustment
MFP—Management framework plan
NEPA—National Environmental Protection Act
NRHP—National Register of Historic Places
NSO—No surface occupancy
OHV-Off-highway vehicle
R&PP—Recreation and Public Purposes
RMP—Resource management plan
ROS—Recreation opportunity spectrum
SLRA—San Luis Resource Area
SLRMP—San Luis Resource Management Plan
SPG—Supplemental program guidance
SPNM—Semiprimitive nonmotorized
SRMA—Special recreation management area
USFS—United States Forest Service
USFWS—United States Fish and Wildlife Service
VRM—Visual resource management
WHA—Wildlife habitat area
wtp—Willingness to pay

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# GLOSSARY

Allotment Management Plan. A concisely written program of livestock grazing management, including supportive measures, if required, designed to attain specific management goals in a grazing allotment.

Acre-Foot. A unit for measuring volume, equal to the quantity of water or other material required to cover 1 acre to a depth of 1 foot or a volume of 43,560 cubic feet.

Alluvium. Unconsolidated rock or soil material deposited by running water, including gravel, sand, silt, clay, and various mixtures of these.

Allotment Management Action. A specific action stated within an allotment management plan.

Animal Unit Month (AUM). The forage needed to support one cow, one horse, or five sheep for a month or one elk, five deer, or five antelope for the same period of time (1,800 lbs./AUM on a 50 percent utilization basis).

Area of Critical Environmental Concern (ACEC). An area within the public lands where special management attention is required: (1) to protect and prevent irreparable damage to important historic, cultural, or scenic values, fish and wildlife resources, or other natural systems or processes; or (2) to protect life and safety from natural hazards.

Avoidance. A partial or complete redesign or relocation of a proposed land use to prevent a potential adverse effect from occurring.

Back-Country Vehicle. Any motorized vehicle for cross-country travel over land, water, sand, snow, ice, marsh, swampland, or other terrain.

BLM Land. Land administered by the Bureau of Land Management.

Birthing Area Closure. May 15 to July 1.

Canopy. The continuous cover of branches and foliage formed collectively by the crowns of adjacent trees and other woody growth.

Conditions of Approval. Conditions or provisions (requirements) under which an Application for Permit to Drill or a Sundry Notice is approved.

Contiguous. Lands or legal subdivisions having a common boundary; lands having only a common corner are not contiguous.

Coordinated Resource Management Activity Plan (CRMAP). An activity level plan completed for more than one resource in a given area/site, usually when conflicts or potential conflicts could occur between various resource activities.

Crucial Winter Range Closure. Lands identified as critical to big game during winter months (December 15 through April 30).

Cultural Resources. Those fragile and nonrenewable remains of human activity, occupation, or endeavor, reflected in districts, sites, structures, buildings, objects, artifacts, ruins, works of art, architecture, and natural features that were of importance in human events.

Discharged Use. A category applied to a cultural resource that was previously qualified for assignment to another category and no longer possess the qualifying characteristics.

Exception. Case-by-case exemption from a lease stipulation. The stipulation continues to apply to all other sites within the leasehold to which the restrict criteria applies.

Ecosystem. Collectively, all populations in a community, plus the associated environmental factors.

Endangered Species. Any species in danger of extinction throughout all or a significant portion of its ranges.

Environmental Assessment (EA). A report analyzing the impacts of some proposed action on a given environment. It is similar to an environmental impact statement (EIS) except it is generally smaller in scope and makes recommendations for action. EAs are sometimes preliminary to EISs.

Eolian. Pertaining to, caused by, or carried by the wind.

Ephemeral Stream. A stream that flows occasionally because of surface runoff, but is not influenced by permanent ground water.

Erosion. The process by which soil particles are detached and moved.

Flyway. An established air route of migratory birds.

Forb. A nonwoody herbaceous plant.

Fragile Soil. Category of problem sites composed of soils that have moderate to high water holding capacities, moderate to slow permeability, and can be severely degraded by compaction, slumping and sliding, and erosion.

Fragile Soil/Slope Gradient. Problem sites where unstable landforms and unstable or erosive soils are made more vulnerable to degradation by steep slopes.

Game Species. Those species commonly harvested either for sport or profit.

Ground water. Water beneath the land surface, in the zone of saturation.

Habitat. A specific set of physical conditions that surrounds the single species, a group of species, or a large community. In wildlife management, the major components of habitat are considered to be food, water, cover, and living space.

Habitat Management Plan (HMP). A written and approved activity plan for a geographical area of public lands identifying wildlife habitat management actions to be implemented in achieving specific objectives related to planning document decisions.

Imprint. A mark or evidence left by man.

Intermittent Stream. A stream that does not flow year-round but has some association with ground water for surface or subsurface flow.

## GLOSSARY (continued)

Intrusion. A feature (land and water form, vegetation, or structure) that is generally considered out of context with the characteristic landscape.

Lease (fluid). A contract in legal form that provides for the right to develop and produce fluid resources for a specific period of time under certain agreed upon terms and conditions.

Leasable Minerals. Oil, gas, sodium, potassium, phosphate, coal, oil shale, tar sands, asphaltic materials, and, in Louisiana and New Mexico, sulphur and all minerals on the Outer Continental Shelf, and in acquired lands.

Locatable Minerals. Minerals or materials subject to disposal and development through the Mining Law of 1872 (as amended). Generally includes metallic minerals such as gold and silver and other materials not subject to lease or sale.

Management Framework Plan (MFP). Land use plan for public lands, which provides a set of goals, objectives, and constraints for a specific planning area to guide the development of detailed plans for the management of each resource.

Mbf. Thousand board feet.

Modification. Fundamental change to the provisions of a lease stipulation, either temporarily or for the term of the lease. A modification, may, therefore, include an exemption from or alteration to a stipulated requirement. Depending on the specific modification, the stipulation may or may not apply to all other sites within the leasehold to which the restrictive criteria applies.

MSA. See Management Situation Analysis.

Management Situation Analysis (MSA). An analysis by the Bureau of Land Management used for making land management decisions that are responsive to public issues to determine the capability of public land resources. This is available for review in the Canon City District Office.

Management Use. The category applied to any cultural property considered most useful for controlled experimental study that would result in its physical alteration.

Mineral Estate. The ownership of the right to all or certain minerals in the land, or reservation of fractional interest in all or certain minerals in perpetuity or for a specified period of time.

Mineral Material. Widespread deposits of common clay, sand, gravel, or stone, which are not subject to disposal under the 1872 Mining Law, as amended.

National Register of Historic Places. The official list, established by the *National Historic Preservation Act* of 1966, of the nation's cultural resources worthy of preservation. The register lists archaeological, historic, and architectural properties (i.e., districts, sites, buildings, structures, and objects) nominated for their local, state, or national significance by state or Federal agencies and approved by the National Register staff.

No Surface Occupancy. A fluid mineral leasing stipulation that prohibits occupancy or disturbance of all or part of the lease surface in order to protect special values. Fluid resources may be developed by directional drilling.

Nongame Species. Those species not commonly harvested either for sport or profit.

Nonuse. Allowable livestock grazing use (in AUMs) that is authorized but is not to be used during a given time period. Nonuse is applied for and authorized on an annual basis.

Off-Highway Vehicle (OHV). This designation replaces the off-road vehicle (ORV) designation and is all inclusive of unsurfaced roads. This designation aids in management of seasonal closures on all unsurfaced roads needing protection during wet seasons or for protection of other resources or values.

Perennial Stream. A stream that has year-round surface flows.

Permeability. The condition of being porous; containing openings or interstices through which outside properties can pass.

Public Use. The category applied to any cultural property that is appropriate for consideration as an interpretive exhibit in place.

Raptors. Birds of prey, such as hawks, owls, and eagles. One of the behavior characteristics of these animals is to return, year after year, to the same nesting area. Accordingly, the nesting sites of these protected species should be retained with minimal human disturbance.

Recreation Opportunity Spectrum (ROS). A method for classifying the land by setting opportunity, according to the ability of the land to provide various types of physical, social, and managerial settings to satisfy the desires and expected behavioral preferences of the users.

Reforestation Problems. Problem sites where two or more types of interfering conditions may cause seedling mortality during the first several growing seasons. High soil temperature, droughty conditions, unshaded southern and western slopes, competing vegetation, animal damage, or wind and frost damage are examples of such conditions.

Rights-of-Way Corridor. A designated parcel of land, either linear or areal in character, that has been identified through the land use planning process as the preferred location for existing and future right-of-way grants and suitable to accommodate more than one type of right-of-way or one or more rights-of-way that are similar, identical, or compatible.

Riparian Area. An area of land directly influenced by permanent water which has visible vegetation or physical characteristics reflective of this permanent water influence.

Riprap. A loose assemblage of broken rock erected in water or on soft ground as a foundation.

Salable Minerals. Minerals, such as common varieties of sand, stone, gravel, cinders, pumice, pumicite, and clay that may be acquired under the *Materials Act* of 1947, as amended.

San Luis Planning Area Boundary. The portion within the area boundary identified for study in the resource management plan; i.e. excludes most of Mineral County and most of the U.S. Forest Service lands.

San Luis Resource Area Boundary. BLM designated boundary; i.e., all of Alamosa, Conejos, Costilla, Mineral, Rio Grande, and Saguache Counties.

## GLOSSARY (continued)

Scientific Use. The category applied to any cultural property determined suitable for consideration as the subject of scientific or historical study utilizing currently available research techniques, including study that would result in physical alteration of the property.

Sediment Yield. The amount of sediment given up by a watershed over a specified time period, usually a year. Ordinarily, it is expressed as tons, acre-feet, or cubic yards of sediment per unit of drainage per year.

Soil Association. A mapping unit used on general soil maps in which two or more defined taxonomic units occurring together in a characteristic pattern are combined because the scale of the map or the purpose for which it is being made does not require delineation of the individual soils.

Solitude. The state of being alone or remote from habitations; isolations. A lonely, unfrequented, or secluded place.

Special Recreation Management Area (SRMA). Areas requiring explicit recreation management to achieve the Bureau recreation objectives and to provide specific recreation opportunities. Special management areas are identified in the RMP, which also defines the management objectives for the area. BLM recreation investments are concentrated in these areas.

Special Stipulations. Additional specific terms and conditions that change the manner in which operations may be conducted on a lease or modify the lease rights granted.

Split Estate. Lands where the surface and mineral estates have been severed and are under different ownership (i.e., private surface/ Federal minerals).

Sustained Yield. The achievement and maintenance, in perpetuity, of a high level of annual or regular periodic output of the various renewable resources of the public lands consistent with multiple use. Amount of resource harvested normally equals the amount grown since the previous harvest.

Supplemental Program Guidance (SPG). Program specific guidance for resource management planning from the 1620 series of the BLM manual.

Threatened Species. Any species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.

Vista. A panoramic scenic view from one or more vantage points.

Visual Resource. The land, water, vegetation, animal, and other features that are visible on all lands.

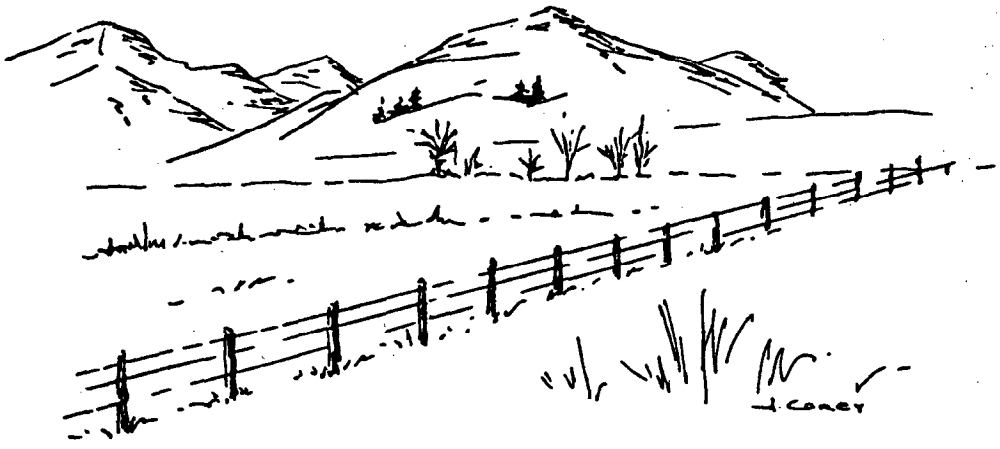
Waiver. Permanent exemption from a lease stipulation. The stipulation no longer applies anywhere within the leasehold.

Wetlands. Permanently wet or intermittently flooded areas where the water table (fresh, saline, or brackish) is at, near, or above the soil surface for extended intervals, where hydric wet soil conditions are normally exhibited and where water depths generally do not exceed two meters.

Wilderness Study Area (WSA). A roadless area, which has been found to have wilderness characteristics (thus having the potential of being included in the National Wilderness System), and which has been subjected to intensive analysis by the Bureau and public review to determine wilderness suitability and is not yet the subject of a congressional decision regarding designation as wilderness.

Withdrawal. An action that restricts the use of public land and segregates the land from the operation of some or all of the public land or mineral laws. Withdrawals are also used to transfer jurisdiction of management to other Federal agencies.

Woodland. Forested land not capable of producing commercial sawtimber, but can and does produce forest products like firewood, transplants, posts and poles, etc.



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